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ROENTGENOGRAPHIC AND MICROSCOPIC STUDIES OF TISSUES INVOLVED IN CHRONIC MOUTH INFECTIONS *

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The idea that mouth infections often cause serious secondary effects has, in recent years, become definitely crystallized in the minds of physician, dentist and layman. Clinical observation has been supported by careful laboratory investigations. It is now generally recognized that a chronic suppurating focus may lead to any one of a considerable group of diseases, most of which are insidious in their development and extremely chronic in their progress. The chronic focus is therefore properly considered a menace to health, and its removal is demanded. The dental profession is thus confronted with a most serious problem, so serious that the practice of dentistry must be to a considerable extent revolutionized for its solution. The chain of causes and symptoms leading up to these mouth lesions and the peculiar physiologic relationships between the tissues involved present complex problems which have been but partially solved. There are, however, certain outstanding features, the clear recognition of which should form a basis for future study.

The normal person should have thirty-two teeth. At 21 years of age the average number of teeth is about thirty; at 60 years this number has been reduced to possibly ten on the average, many having lost all. With few exceptions the loss has been the result of chronic infection, either alveolar abscess or chronic pericementitis. On the average, each person loses a tooth every year and a half or two years, the number increasing with advancing years, each tooth having been a source of chronic infection for from one to five or ten or fifteen years, so that a large percentage of persons are not free from infection involving the maxillary bones from 20 years of age until death, or until all the teeth are lost. It is safe to say that fully 50 per cent. of persons 25 years old have infections which have destroyed areas of the bone about the teeth sufficient to be easily detected by roentgenoscopy, and that this percentage gradually increases until it closely approaches 100 per cent. in persons who are not edentulous at 50 years of age. The estimate made several years ago by Dr. T. L. Gilmer that 75 per cent. of adults would be shown to have chronic infections involving the maxillary bones is fully supported by statistics thus far gathered.

* Chairman's address, read before the Section on Stomatology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

It would seem desirable to establish the element of danger to health which these infections represent. It is not possible at this time, however, to express in figures the relationship existing between these mouth foci and the systemic effects, because the same systemic effects may result from such a variety of sources. Mouth infections might be considered as causal in proportion of their percentage of occurrence to other original foci, although the defense of the various tissues attacked would doubtless modify such a calculation. It is certainly illogical to conclude that a particular systemic effect is due to a mouth focus unless all other sources have been eliminated. Without question, in many cases, several sources are acting simultaneously.

Apparently the resistance of a large percentage of persons is sufficient to give full protection for years, yet we must ever keep in mind the insidious development of the secondary effects and then ask ourselves if we can be even reasonably certain that one's health is safeguarded so long as there is definite evidence of infection in the mouth.

There are two points of initial attack and two entirely separate routes of progress by which chronic mouth foci become established. The chronic lesions themselves, however, have many characteristics in common. The one begins with dental caries, as a result of which the pulp of the tooth becomes involved directly or indirectly and an inflammation of the periapical tissues is established. The other begins as a gingivitis and progresses alongside the root toward the apex, involving the peridental tissues. In both, the destructive processes include the peridental membrane, the bone of the alveolar process and the cementum covering the root of the tooth.

In view of the high prevalence of both forms of these lesions in adults, and of their extreme chronicity and intractability to treatment, to which reference will be made later, our hope for the future lies principally in prevention, and it is this which calls for radical changes in dental practice. Dental caries must be prevented or so treated that there will be the highest possible degree of pulp conservation. This means broader education of the public, and especially of children, to the need and means of better care by themselves, as well as more frequent and regular observation and treatment by the dentist. The dentist must follow more scientific lines in all operations better to control caries, and so to prepare and fill cavities that the pulps will remain vital. Gingival irritation must be reduced by better cleanliness by the patient and there must be improvement of technic in both operative and prosthetic procedures by the dentist so that there will be no irritation, either by margins of fillings, crowns, etc., or by food impaction as a result of faulty forms

or tooth contacts. While these are simple statements which are readily accepted by all, their adoption in practice can come about only as a result of a fuller appreciation by dentists generally of the pathologic problems involved, both at the original foci and in the remote after-effects.

The changes which take place in the peridental tissues, as inflammatory processes progress to the establishment of chronic foci, represent the normal reaction to chronic irritation accompanied by infection, plus certain changes in the specialized elements of these tissues. Noyes[1] has recently shown that the principal route of travel of the infections beginning in the gingivae is by way of the perivascular lymphatics. He called attention to the fact that, in cases of gingival irritation caused by deposits of salivary calculus, the vessels of the gum tissue are followed and the destruction of the bone of the alveolar process is from the gum side. This explains the previous clinical observation of Black[2] that deposits of salivary calculus do not, as a rule, cause the formation of pockets alongside the roots of the teeth.

In cases of chronic pericementitis, the blood vessels which lie within the peridental membrane are followed. As the course of these vessels is mainly in the direction parallel to the long axis of the tooth, we have an explanation of the more rapid progress of these infections toward the apex, as compared with their progress laterally around the root, resulting in deep, narrow pockets. The fact that chronic alveolar abscesses do not cause a similar destruction of the peridental membrane in the opposite direction is also explained, as the movement of the lymph is from the gingivae apically.

Many specimens[3] of the tissues overlying these pockets, some including the teeth and all of the surrounding structures, studied in the research laboratory of Northwestern University Dental School during the past five years, show the changes which have been described by Talbot, Noyes and others. These include the thickening of the walls of the vessels to the point of obliteration, with the gradual disintegration of the surrounding tissues until apparently necrotic areas are formed, the tissue taking the ordinary stains poorly or not at all. These areas involve both the soft tissue and the alveolar process. Eventually the peridental membrane seems to be severed for a space, leaving a portion attached to the cementum of the root and a portion attached to the alveolar process. Areas of absorption of the cementum appear in many specimens; these apparently occur early, as a response to the irritation caused by the approaching destructive process. Later the tissue remaining attached to the cementum dies and disappears, leaving the cementum entirely denuded. The cement corpuscles also die, and the cementum becomes a necrosed, pus-soaked tissue.

The peridental fibers attached to the bone are similarly destroyed, and the bone is also invaded, areas being hollowed out along the lines of the vessels. Black[4] called attention to the fact that we might expect the fibers of the peridental membrane and the alveolar process to disappear, as a purely physiologic process of absorption, following the severance of the membrane from the cementum, regardless of the continued progress of the pathologic invasion. Doubtless both processes are factors in most cases.

The rôle which the gingival epithelium plays in these cases is extremely interesting. Many specimens show extensive projections deep into the submucous tissues and into the bone itself. Cross sections of these projections frequently show the cells in concentric rings, suggesting epithelioma. A growth of epithelium down into the pocket is frequent, apparently an attempt to line the pocket and protect the connective tissue. We have also noted, in cases in which the overlying tissue is cut away, exposing the denuded root, that the epithelium of the gum tissue will not only cover the cut surface, but also grow down to the line of attachment to the cementum, thus forming a new gingiva.

Practically the same changes take place in chronic alveolar abscess, except that the progress along the surface of the root is slower, is more likely to include the entire circumference, and a cavity is formed in the bone corresponding to the area of detachment of the cementum. The bacteriology of these cases has been studied by Gilmer[5] and reported in several papers. The bacteriology of the pus pocket is more complex, and will probably never reveal a specific organism. The paper read before this section last year by Lescohier[6] gives practically all available information.

As has been pointed out prominently before, the denuded cementum is the factor of prime importance in maintaining the chronicity in both groups of cases. A pus-soaked tissue, analogous to necrosed bone, except that it cannot be exfoliated, it defies reattachment of the adjacent tissue and remains as a continuous irritant. The prompt healing of these areas following the extraction of the teeth is sharp evidence of the rôle which the cementum plays. While the invasion of the surrounding soft tissues by infection is of the greatest importance in considering these areas as a menace to health, it is of very little consequence so far as healing is concerned. The infection is quickly eliminated by the tissues when the irritant — the cementum — is removed.

During the past year I have had roentgenograms made of all the teeth and adjacent bone for about 400 persons, for the special purpose of determining the frequency and extent of the infections of the maxillary bones. It was realized that most roentgenograms are taken because of a definite indication; consequently they do not represent average conditions. In order that these might represent as nearly average conditions as possible, the persons were selected from several sources, and most of them without previous inquiry as to mouth conditions or general health. About 175 are of the mouths of members of the senior class at Northwestern University Dental School, a few were patients of the school, a few were patients of other dentists, a few were selected from the files of Dr. Leach, who did the roentgenographic work, and a limited number were my patients.

For persons under 40 years of age, the figures presented probably represent very nearly average conditions. We were able to select from these roentgenograms a group of thirty full mouth examinations for persons, most of whom had the full complement of

1. Noyes, F. B.: Studies of the Pathology of the Peridental Membrane, Jour. National Dental Assn., April, 1917, p. 375.
2. Black, G. V.: Special Dental Pathology, p. 100.
3. Specimens prepared during the past year by E. H. Hatton, M.D., research investigator, Northwestern University Dental School.
4. Black, G. V.: Special Dental Pathology, p. 168.
5. Gilmer, T. L.: Chronic Oral Infections, Arch. Int. Med., April, 1912, p. 499. Gilmer, T. L., and Moody, A. M.: A Study of the Bacteriology of Alveolar Abscess and Infected Root Canals, THE JOURNAL A. M. A., Dec. 5, 1914, p. 2023; Oral Health, February, 1916.
6. Lescohier, A. W.: The Bacterial Findings and Their Relationship to Pyorrhea Alveolaris and Interstitial Gingivitis, THE JOURNAL A. M. A., Feb. 10, 1917, p. 414.

thirty-two teeth, which show no infection whatever of the maxillary bones, and not one of these thirty persons had had a single pulp of a tooth removed. The 300 films of this group are mounted on a single sheet of celluloid and make an interesting study.

For persons over 40 years of age we were not so fortunate in securing a large majority who did not present evidence of infection before the roentgenograms were ordered. Therefore they show a percentage of infection above the average.

The accompanying table was made from 3,000 roentgenographic films of the teeth and adjacent bone of the mouths of 300 adults.[7] In each case ten small films were made. The tabulation includes the age, systemic symptoms, number of teeth, disease of the peridental membrane as indicated by destruction of bone alongside the roots, alveolar abscess as indicated by destruction of bone at the apexes of roots, the number of teeth having good or poor root canal fillings with the number of abscesses in relation to each group, and the number of teeth without root fillings which were abscessed.

In order to secure as accurate information as possible as to systemic effects, it being impracticable to have a thorough physical examination in these cases, a questionnaire was prepared as follows: 1. Are any of the finger joints enlarged? 2. Has the patient noticed enlargement of other joints? 3. Have other joints or muscles been painful? 4. Is the patient anemic? 5. Is there inflammation of eyes, or impairment of vision, other than astigmatism? 6. Is there inflammation of nose, throat or tonsils? 7. Have there been attacks of appendicitis, ulcers of stomach, cholecystitis or other systemic conditions which might result from focal infection? 8. Does the patient complain of unusual nervousness or fatigue? On reviewing the answers the patient was entered as (1) negative, or (2) presenting occasional muscular, joint or similar symptoms, or (3) as having a well defined case of arthritis, nephritis, appendicitis, etc.

Through a misunderstanding on the part of one of my assistants, this report of systemic symptoms was not secured for sixty-eight persons included in the tabulation. It is realized that 300 cases would not have been sufficient to establish reliable data as to the relationship of these foci to systemic effects, and it is my intention to continue this study until several thousand persons shall have been examined. The statistics gathered so far are considered as forming a good basis for this work. It may be said now, however, that of those for whom histories were secured, there is a decided increase with advancing years which follows closely the percentage increase of mouth infections.

The average number of teeth per person is interesting. The tabulation shows thirty teeth per person under 25 years, twenty-nine per person of 25 to 30 years, twenty-six per person of 30 to 40 years, twenty-five per person of 40 to 50 years, and twenty-three per person over 50 years.

Destruction of bone about the sides of roots of teeth as a result of infections beginning in the gingivae is shown to increase very markedly after the twenty-fifth year, there being 9 per cent of persons below 25 years having these pockets, and 32 per cent. for the ages from 25 to 30 years. For the succeeding decades the percentage increases to 64, 74 and 92. The number

TABULATION FROM 3,000 ROENTGENOGRAPHIC FILMS, OF TEETH AND ADJACENT BONE IN MOUTHS OF 300 ADULTS*

Age	Number	Systemic Symptoms: No History	Negative	Complaint of occasional muscular or joint symptoms	Well defined cases, arthritis, nephritis, appendicitis, etc.	Average number teeth per person	Peridental Membrane: Number of persons, some bone destroyed at sides of roots	Percentage having bone involved	Average number of abscesses per person	Alveolar Abscess: Number of persons, some bone destroyed at apexes of roots	Percentage having bone involved	Average number of abscesses per person	Summary: Number of persons having peridental or apical infection or both	Percentage of persons having infections of both types	Root Fillings: Number of persons having root fillings	Total number of teeth with root fillings	Percentage of all teeth having root fillings	Number of root apexes not clearly shown	Large Canals: Number of good root fillings	Number abscessed with good root fillings	Number of poor root fillings	Number abscessed with poor root fillings	Small Canals: Number of good root fillings	Number abscessed with good root fillings	Number of poor root fillings	Number abscessed with poor root fillings	Alveolar Abscesses: Total abscessed with root fillings	Number abscessed, no root fillings	Total abscessed	Average number of abscesses per person
Under 25....	86	6	69	6	5	30	7	9	0.3	45	52	1.5	48	56	59	198	7.7	35	57	2	74	60	22	1	69	41	104	24	128	1.5
25 to 29.....	53	2	42	6	3	29	17	32	2.0	28	53	1.6	38	72	38	121	7.9	18	24	6	48	31	26	4	31	23	64	24	88	1.6
30 to 39.....	68	25	27	12	4	26	44	64	7.0	45	66	1.3	59	87	53	236	13.4	50	39	4	89	47	20	1	70	42	94	12	106	1.3
40 to 49.....	53	17	20	5	11	25	49	74	7.0	36	68	2.0	47	89	44	185	13.7	34	28	1	84	55	10	2	45	28	86	13	99	2.0
50 and over.	40	18	4	5	13	23	37	92	11.0	22	55	1.5	40	100	28	111	10.9	15	30	0	43	32	17	2	27	20	54	6	60	1.5
Totals....	300	68	162	34	36	27	155	51	5.0	176	59	1.6	232	77	222	851	9.0	152	178	13	338	225	95	10	242	154	402	79	481	1.6

Large Canals: Upper central incisor, cuspid, second bicuspid, lingual roots of molars, lower cuspid, first and second bicuspids, distal roots of molars.

Small Canals: Upper lateral incisor, first bicuspid, buccal roots of molars, lower incisors, mesial roots of molars.

SUMMARY OF ABSCESSES IN RELATION TO ROOT FILLINGS

		Number Abscessed
Good root fillings, large canals	178	13
Good root fillings, small canals	95	10
	273	23
Poor root fillings, large canals	338	225
Poor root fillings, small canals	242	154
	580	379
Total	853	402

Percentage of abscesses for all root fillings 47; for good root fillings 8; for poor root fillings 65.

* In this tabulation, the figures are probably very nearly correct as applied to all persons of ages below 40 years, as in the large majority, roentgenograms were made without regard to indications. For persons of 40 years and over, a considerable percentage of the roentgenograms were taken because of definite indications of infection, and the figures given are therefore correspondingly at variance from average conditions.

The persons whose mouth conditions are tabulated were selected from various sources, as described in the paper, comparatively few being patients of the writer.

7. Three thousand three hundred roentgenographic films, on celluloid mountings with illuminating box, were exhibited in connection with the presentation of this paper. These films were prepared and mounted by F. D. Leach, D.D.S., roentgenographer, Northwestern University Dental School, and his assistants.

of pockets per month also shows considerable increase with age.

Fifty-two per cent. of persons under 25 years have chronic alveolar abscess, a much greater percentage than that of pus pockets alongside the roots in the same group. The abscess percentages do not increase as rapidly as the cases of chronic pericementitis, being 53 per cent. for persons from 25 to 30 years, 66 per cent. for persons from 30 to 40 years, 68 per cent. for persons from 40 to 50 years, and only 55 per cent. for persons over 50 years. The smaller number for those over 50 years is evidently because of extractions.

A summary of those having either peridental infections beginning at the gingivae or periapical infections, or both — persons who have infections involving the maxillary bones — gives rather astonishing results. The percentage is 56 for persons under 25 years of age, 72 for those between 25 and 30 years, 87 for those between 30 and 40 years, 89 for those between 40 and 50 years, and 100 per cent. for those over 50 years.

The youngest person in the tabulation was aged 17 years, and there were but nine out of the eighty-nine in the group under 25 years of age who were under 21, so that the figures for this group might be considered as from 20 to 25. While no tabulation has been made for children, I think I am safe in stating that practically no infection of the peridental membrane beginning in the gingivae will be found, and comparatively few chronic alveolar abscesses. Therefore, attention may be called to the fact that the tonsils are much more likely to be the seat of original foci in children.

Attention is again called to the fact that the figures for persons beyond 40 years are too high as average figures, especially for peridental infections, because the roentgenograms for many of these, and especially for persons over 50 years, were taken because the patients presented themselves for consultation.

The tabulation of abscesses in relation to root fillings should be of special interest to dentists. The remark has often been made that roentgenograms show many teeth with imperfect root fillings which are not abscessed, and such observations have doubtless supported continued carelessness in the technic of treating and filling root canals. For this study, the teeth are divided into two groups, those having large root canals, and those having small canals. The root fillings were classified as good or poor. A root filling was classed as good if it extended to or close to the end of the root, and if the filling apparently filled the apical portion of the canal. For some small canals, if the filling did not reach the root apex by 3 or 4 mm. and the canal could not be made out in the roentgenogram beyond this point, the root filling was classed as good. I do not advocate this plan of treating small canals, but wish to impress the fact that I was liberal in classifying root canal fillings as good.

Of the teeth with root fillings in large canals classed as good, but thirteen out of 178 were abscessed; in small canals, but ten out of ninety-five. This is 8 per cent. Of those in large canals classed as poor, 225 out of 338 were abscessed, in small canals 154 out of 242. This is 65 per cent. Could there be presented a better argument, a more imperative demand, for more careful technic in the treatment of root canals?

CONCLUSION

These suppurative detachments of the peridental membrane are in practically all cases permanent detachments, whether the detachment is at the side of the root or the apex. The area of bone destroyed about the apex of a root is not so important as the extent of the destruction of the peridental membrane. There is no hope of reattachment of the surrounding tissue to the root, and if such teeth are permitted to remain in the mouth — excepting those which are operated on by resection — it should be with the definite understanding that they necessarily continue as a menace to the health of the individual, and that the use of such teeth in mastication overbalances this menace to the health. In such cases we are using our best judgment as to the patient's general physical condition and his resistance. We must do this with the thought ever in mind that nephritis, endocarditis, cholecystitis and other secondary effects are so insidious in their onset that the condition is likely to be serious and the patient even beyond the possibility of recovery before it is discovered by the physician.

ABSTRACT OF DISCUSSION

Dr. Thomas L. Gilmer, Chicago: To offset the great harm that is being done by infectious mouth foci, our methods of practice must be changed. I have no doubt, as the essayist has said, that mouth foci are blamed for many things for which they are not responsible. There are some dentists and not a few practitioners of medicine who are doubtless going too far in the wholesale removal of teeth. The physicians with whom I have been associated endeavor to eliminate all foci of infection, including the teeth, from all parts of the body. They realize that there are many other parts of the body beside the jaws which may be a cause of metastases. Pyorrhea specialists should take up the subject of pyorrhea in somewhat the same exhaustive way as has been done by Drs. Black and Noyes to determine what its pathology is. Then they may be able to offer rational treatment which will bring about a cure. No one should call himself a specialist unless he does this. Dentists have tremendous problems before them which will take the wisest and best among them to solve. I trust that they will go to work at once to discover the cause and cure of some of the more serious diseases of the mouth.

Dr. G. Alden Mills, New York: Dr. Black's analysis and research in this matter take me back to 1876 when I wrote the first articles that were published on this subject of Riggs' disease, except one by Dr. Riggs, and by these articles were initiated the studies on pyorrhea. I studied in sympathy as a student of Dr. Riggs. I had the value of his acquaintance and the value of his treatment on my teeth, and though 86 years old, I am happy to say that I have a good many teeth left. Dr. Smith of Philadelphia has forced on the profession the question of prophylactic treatment. So we have now to say that prophylactic treatment is of immense help in the treatment of this disease.

Dr. E. P. R. Ryan, New York: The greatest thing about Dr. Black's paper is the information he has given us of the cases he has reported that are not, and cannot be blamed for systemic infection. Men working every day need some standardization of examination of the roentgenograms that are made. We all have an isolated case here and there that we lay to some systemic condition of the mouth; but what the man in practice wants to know for making a rational diagnosis is, What is the percentage of those cases? We can extract all the teeth in the mouth, but that is not good dentistry, and that is not going to cure the disease. I think the suggestion of the examination of the normal teeth as well as those diseased, and determination of the relative percentages, should be accepted, and some means devised whereby we can all make observations and report them, and arrive at some definite and precise conclusion.

Dr. Arthur Zentler, New York: As the paper of Dr. Black deals with the pathologic study of the tissues involved in infections of the mouth, I feel that it may be appropriate to report the divers findings in the examination of sections obtained in operating for eradication of such oral infections.

The picture seen in the photomicrographs prepared from pathologic laboratory slides is different when obtained from mouths of patients suffering from different types of general disturbance; for instance, arthritis, cardiac lesions; infection due to external trauma (a blow on the chin), which is relatively of acute character, apparently causing no general disturbance; still different when the infection is due to operative trauma, the infection being of long standing and in a patient of a special diathesis; for instance, tuberculous.

[The discussion was illustrated by lantern slides.]

DR. ARTHUR D. BLACK, Chicago: Among the films exhibited, there is a set of roentgenograms of the mouth of a patient who was under the care of a so-called pyorrhea specialist. The radiographs show that the alveolar process has been destroyed nearly to the ends of the roots of the upper bicuspids and molars, and these teeth are apparently being held in place by orthodontia appliances while they are scaled and treated. This case illustrates what I meant when I said the practice of dentistry needs to be revolutionized. Here is a mouth in which it is evident to any one who has studied the problem of focal infections that the teeth should be extracted. There must be developed in the dental profession a sense of recognition of mouth infections before we can make real progress with this subject. The dental profession must recognize that such foci are a menace to health; then it will not be difficult to get action. The more I study these conditions the more I am convinced that more teeth must be extracted.

THE IMPORTANCE OF DIET AS A FACTOR IN THE PRODUCTION OF PATHOLOGIC CHANGES *

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It has long been known to the medical profession that the etiology of certain diseases is closely associated with, and may indeed be dependent on, the kind of food in daily use by man. This was found to be especially the case when the employment of a particular diet was persisted in for a considerable length of time. But within recent years the conception of a causal relation between diet and disease has taken a more serious turn, leading in some cases to the formation of well defined plans for the establishment of a connection between the food eaten and the manifestation of some morbid processes. The progress made in this direction may be readily appreciated on examination of the literature on this important subject, which bears evidence of numerous painstaking and in some cases exhaustive experimental inquiries that resulted in the accumulation of a considerable store of valuable information. The data at hand, although far from complete, nevertheless justify the conclusion that abnormal changes may be seriously influenced, and sometimes brought about, by the consumption of certain foods.

It has been shown by numerous experiments that a diet from which the juices of certain fruits are absent may cause a condition closely similar to, if not identical with, scurvy in man. The investigations on beriberi have disclosed the important fact that an exclusive diet of polished rice when eaten for some time may produce this condition in the human subject. It has also been definitely established by a number of observers that polished rice alone fed to birds for about six weeks may cause polyneuritis. Recent studies of pellagra have likewise shown that its etiology is closely associated with deficient diet.

The rôle which diet plays in the causation of disease seems to be even more extensive than that just indicated, different lines of inquiry furnishing evidence of its growing importance in pathology. That it is not confined to the so-called deficiency diseases is suggested by the results of pharmacologic investigations which have been brought to light within the past few years, for it has been shown that a definite relation exists between diet and pathologic changes produced by well defined chemical substances.

A valuable contribution to the subject was made by the investigations of Hunt,[1] whose results indicate the importance which might be attributed to diet as a factor in determining the toxicity of some poisons. In experiments on mice that were fed a large number of different substances, Hunt found that the reaction to acetonitril varied considerably with different diets, some of which increased forty times or more the resistance to this poison. Glucose, oatmeal, liver and kidneys were found to exert a beneficial effect, the toxicity of acetonitril being decreased many times. This is attributed by Hunt in part to a specific effect on the thyroid. He also pointed out that some articles of diet, such as eggs, milk, cheese and various fats may, on the contrary, lower the resistance to acetonitril.

The protective action of diet against drugs has been studied at various times in the pharmacologic laboratory of the Bureau of Chemistry for several years. In studies with caffein, Rieger and I[2] were frequently impressed by the difference in the reaction to this drug which was exhibited by dogs receiving different amounts of protein.

A high protein diet, it was found, was conducive to increased resistance to this drug. It might be stated that all the animals were given a diet of the same caloric value, but the amount of meat was reduced to 6 gm. daily, which is one third of the amount given in the experiments on a high protein diet. In individuals that received a low protein diet, symptoms developed after much smaller doses. We also found in some experiments that abscesses developed at the site of injection when caffein was given subcutaneously. The same treatment in dogs on a liberal diet of meat was never followed by local infection in any of the experiments with caffein which were performed in my laboratory. Evidence of the effect of diet was also furnished by studies that were carried out with several other chemical substances. In experiments on the toxicity of oil of chenopodium which Nelson and I[3] carried out on different animals, we found that fatty oils modify the action of this substance. The toxicity of the oil of chenopodium for cats and rabbits which had received cottonseed or coconut oil was diminished at least 50 per cent. in some cases. The surely fatal dose of this drug was well borne, or caused only slight symptoms in animals which had received this substance with the fatty oils. Evidence was also obtained that diet rich in carbohydrates has a similar effect on rabbits to which the essential oil is administered.

As pointed out in my paper with Smith,[4] rabbits which were fed carrots resisted much larger doses of the tartrate than those which received oats and cabbage. More than twice the surely fatal dose could be given

* From the Pharmacological Laboratory, Bureau of Chemistry, U. S. Department of Agriculture.

* Read before the Section on Pathology and Physiology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Hunt: Bull. 69, Hyg. Lab., U. S. P. H. S.
2. Salant and Rieger: Bull. 148, Bur. of Chem., U. S. Dept. Agric.
3. Salant and Nelson: Am. Jour. Physiol., 1915, **36**, 440.
4. Salant and Smith: Am. Jour. Physiol., 1914, **35**, 239.

without producing symptoms. The investigation of the effect of diet on the toxicity of this substance was resumed recently, and was considerably extended by Swanson and myself.[5] The observations were made on rabbits and cats with a large number of different diets which were given for some time previous to the subcutaneous injection of tartrate. Striking differences in the toxicity were observed. A dose of 3 gm. per kilogram was survived when young carrots were fed for four days before the tartrate was given. In another series with 3.5 gm. per kilogram, one out of four rabbits survived and another lived six days. The surely fatal dose was found to be not less than 4 gm. per kilogram. The resistance was likewise very marked when carrot leaves were fed from four to eleven days before injecting tartrate, although it was less than in the case of the tuber of young carrots, the minimum fatal dose being about 2.5 gm. per kilogram.

A high degree of resistance to tartrate was also shown when sweet potatoes were fed. A dose of 2.0 gm. per kilogram failed to produce nervous symptoms or furnish evidence of renal irritation. Sodium tartrate proved to be most toxic when the diet consisted of oats. Under certain conditions 0.5 gm. per kilogram injected subcutaneously proved to be fatal in 85 per cent. of the experiments, symptoms of renal irritation and nervous disturbances being noticed; but in some cases it was necessary to give 1 gm. per kilogram to produce typical symptoms and death. In other words, the resistance to tartrate was at least four times as great on a diet of young carrots as on oats. Experiments with tartrate on cats that received different diets failed to show any marked difference, but it may be remarked that in these animals the toxicity was markedly increased in starvation, which was also noticed in rabbits. There is reason to believe that similar effects may be produced not only in starvation, but when the diet is restricted.

That protection is also afforded by diet against the injurious effects of some of the heavy metals was furnished by the results of experiments with zinc malate. Wise and I[6] found that small quantities of this salt given intravenously to rabbits produced marked albuminuria in twenty-four hours. Zinc malate equivalent to 10 mg. of zinc per kilogram was injected into the ear vein of rabbits which were fed oats or carrots for some time previous to the experiment. Out of six rabbits which received a diet of oats alone, only one survived; two lived three days; the rest died at the end of four, six and eight days. All of them developed a very pronounced albuminuria, approximately 300 to 500 mg. of albumin being present in 100 c.c. of urine. The rabbits which received carrots as the exclusive diet exhibited a decidedly greater resistance to zinc poisoning. Only two fatal cases occurred in the same number of experiments. One of the rabbits died after two days, but in this experiment 1.25 mg. of zinc per kilogram were given, and what may be particularly interesting in this connection was the fact that the appetite of the animal was poor before the zinc was administered. It is worthy of note that but a trace of albumin could be found at any time after the injection of zinc malate in these two rabbits. In all of the other carrot-fed rabbits that survived the injection of zinc, the injury to the kidney was apparently not serious, if it existed at all. In some cases the urine was free from albumin or contained mere traces. Appreciable quantities were found, however, in the course of observation, but in nearly every case they disappeared within twenty-four hours. This, as is well known to every experimenter who has studied the urine of rabbits, is a frequent occurrence in these animals and may be physiologic. It cannot be attributed, therefore, to zinc. Evidence that a carrot diet protects the kidney against other nephritic poisons was obtained in my laboratory in experiments with oil of chenopodium and coconut oil. Bengis and I[7] carried out a series of experiments with these two substances on rabbits. Our results have shown that from 0.2 to 0.4 c.c. per kilogram of the oil of chenopodium dissolved in 15 c.c. of coconut oil and fed to rabbits may be followed by albuminuria which was very pronounced in some individuals. The appearance of many granular casts which persisted for several days had also been observed. Another series of rabbits, which had been receiving carrots for several days, were subjected to the same treatment. Indeed, the amount of oil of chenopodium per kilogram that was fed with 15 c.c. coconut oil was even larger than in those rabbits fed on oats, but no evidence of renal disturbance was present. Neither albumin nor casts appeared as a result of this treatment. Furthermore, when the same animals were given oats, and then carrots, the results obtained were similar to those described above. The albumin and casts promptly disappeared when the carrots were substituted for oats. It also happened sometimes that the appetite in some of the carrot-fed rabbits suddenly diminished. This was soon followed by the appearance of urinary symptoms, thus showing again that a carrot diet protects the kidney. Finally, I should like to report the results which Swanson and I[8] have been fortunate to obtain recently in our studies on the effect of diet on the permeability of the kidney in tartrate nephritis. These experiments, which are still in progress, indicate that the injury to the kidney caused by this salt varies considerably with the diet. From 0.2 to 0.3 gm. of sodium tartrate given subcutaneously may retard the elimination of phenolsulphonephthalein to a very considerable extent in rabbits when fed oats alone. The amount of dye eliminated had decreased by a half to two thirds about five hours after the administration of 0.2 gm. sodium tartrate per kilogram.

The injury was much greater when 0.3 gm. sodium tartrate per kilogram was injected. None, or merely a trace, of the dye appeared in the urine of two rabbits on the day of the injection of tartrate. Three days later phenolsulphonephthalein was injected again. Four per cent. of the dye was eliminated by one rabbit, and 5 per cent. by the other in three hours. In a third experiment 37 per cent. of the dye was eliminated on the day tartrate was injected. A test made two days later indicated that no improvement occurred, the amount of dye eliminated being 30 per cent. In all cases functional tests were made on the two preceding days before injecting tartrate. The amount of dye eliminated varied between 63 and 86 per cent. When the dose of tartrate was raised to 0.5 gm. per kilogram, from 0.5 to 1 per cent. of dye appeared in the urine on the day of injection. Its elimination continued for several days. When carrots alone were given for three to four days previous to the injection of tartrate, and if this diet was continued for some time after the administration of tartrate, renal permeability remained quite satisfactory, although the minimum dose was

5. Salant and Swanson: Proc. Soc. Exper. Biol. and Med., 1917, **14**, 100.
6. Salant and Wise: To be published.
7. Salant and Bengis: Jour. Pharmacol. and Exper. Therap., 1917, **9**, 1529.
8. Salant and Swanson: To be published.

much larger than in experiments on a diet of oats. Functional tests made at the end of five hours after injection of 0.5 gm. of tartrate per kilogram indicated that the elimination of dye was normal, or nearly so, in all cases except one, in which only 31 per cent. of phenolsulphonephthalein was eliminated on the day tartrate was administered. It may be remarked that in this case the permeability of the kidney was found to be below the average during the preliminary period. Corroborative evidence of the favorable effect of this diet was obtained with larger doses. One gm. of sodium tartrate per kilogram caused marked retardation of the elimination of phenolsulphonephthalein in some experiments, but in most cases recovery of renal permeability was observed within one to three days after injecting the tartrate. It is worthy of note that it occurred even when the dose was doubled.

In experiments with 2 gm. of sodium tartrate per kilogram, disturbance of renal permeability was observed at the end of one or two days; but recovery occurred on the second or third day.

The protective action of diet against injury to the kidney had also been pointed out by previous investigators. Ellinger[9] reported about ten years ago that cantharidin failed to cause nephritis in rabbits which had been receiving carrots. More recently Opie and Alford[10] maintained that a carbohydrate diet protects the kidney, as well as the liver, against different poisons. It may be pertinent to inquire how this action is brought about, and which component of the diet is responsible for the protection afforded. The larger amount of bases causing an alkaline urine may be thought of as the cause, but this can be promptly eliminated from our consideration since other alkaline diets, such as hay or cabbage, do not protect the kidney against tartrate. Whether the large amount of sugar present in carrots, which favors the accumulation of very considerable quantities of glycogen, is a factor is not decided. It appeared to me[4] at one time that such an assumption might be justified. The explanation may be found perhaps in the effect a carrot diet produces on bacterial growth. It has been shown by Metchnikoff and Wollman[11] that indol formation is inhibited in rabbits when fed carrots. Perhaps the formation of cresol and phenol, and other substances which may cause renal irritation, is likewise inhibited by a carrot diet or other diet rich in sugar. Intestinal intoxication may indeed be the important factor, therefore, which operates in modifying the toxicity of various poisons.

Our knowledge of the relation of diet to the action of poisons is, of course, far from being complete. Indeed, it is as yet in its infancy. The evidence which I have presented is not intended as a warrant for generalization, but it should serve rather as a stimulus to further investigation of a difficult but a very important subject full of promise of valuable results to medicine.

ABSTRACT OF DISCUSSION

DR. ROBERT A. HATCHER, New York: Dr. Salant's paper deals with a subject of such extraordinary complexity that no systematic discussion of it is possible in a short time, hence no apology is necessary for limiting my remarks to a few suggestions. It has probably occurred to Dr. Salant that the water present in a diet of carrots might account for some of the difference in the toxicity observed. Intestinal secretion and intestinal movements are also markedly influenced by the amount of water taken, and it may be recalled that tyramin and histamin, to mention only two active substances, have been found in the circulation during intestinal stasis, and it is easy to understand that these and other poisons may influence the circulation profoundly, and existing pathologic processes secondarily, in the most diverse ways.

We have had occasion to observe a remarkable difference in the toxicity of certain active poisons for vegetarian rodents, including the guinea-pig, rabbit and white rat, on the one hand, and carnivorous animals, such as the cat and dog, on the other. In some cases, at least, we have found this to be due to difference in the capacity of the liver to fix and destroy poisons, as shown by the fact that when the liver of the resistant rat is removed it behaves toward some of these poisons more nearly as the cat or dog does.

I have been tempted to suggest a general, but not universal, development of a tolerance toward vegetable poisons in these animals, which must be subject to frequent accidental poisoning. Dr. Voegtlin recently remarked to me that the effects of diet on the toxicity of poisons indicate some of the precautions to be observed in conducting those biologic tests which are dependent on toxicity, such as the biologic standardization of drugs.

DR. ALFRED F. HESS, New York: The fact that the toxicity of these drugs is increased on an oat diet, which is essentially an acid diet, and is lessened by a diet of carrots, which is essentially an alkaline diet, raises the question whether the reaction of food plays an important part. Dr. Salant touched on this question. He said that carrots and cabbage, which constitute also an alkaline diet, do not have the same effect. Did he give an alkaline diet to any of these animals? Did he try to neutralize the acid effect of the oat diet by a liberal addition of some alkali?

DR. WILLIAM SALANT, Washington, D. C.: The question raised by Dr. Hatcher regarding diuresis being a factor in increasing the resistance to different poisons has been attended to in our studies of the subject, but I did not bring all the experimental material before you on account of the short time allowed for presentation of the paper. Rabbits which were fed oats were given 100 c.c. of water by mouth two or three times a day. Beside, diets which favor diuresis, such as cabbage, have not the same protective effect as a diet of carrots. Furthermore, not all carrots have the same protective action. Old or winter carrots did not produce the same effect as young carrots, although the diuretic action is the same, the amount of urine passed being equally large in both cases. But young carrots differ in chemical composition from old carrots. As regards the alkalinity of the diet, I might add that we fed rabbits on hay. The alkalinity of the urine was much more marked than after carrots. Yet the toxicity of tartrate was about the same as on a diet of oats.

9. Ellinger: München. med. Wchnschr., 1905, **52**, 499.
10. Opie and Alford: Jour. Exper. Med., 1915, **21**, 21.
11. Metchnikoff and Wollman: Ann. de l'Inst. Pasteur, 1912, **26**, 825.

Reducing the Number of Stillbirths.—Report of an experiment in the care of expectant mothers with the idea of reducing the number of stillbirths and the deaths of babies during the first month has been made by the New York Milk Committee. Stillbirths were reduced 22 per cent. and deaths during the first month 28 per cent. These figures were arrived at by a comparison of the results from the experiment carried out by the milk committee with corresponding statistics of the Borough of Manhattan during the period 1912 to the end of 1916. During this period 3,145 expectant mothers were enrolled and given care and supervision for an average of three and one-half months before and one month after confinement. Each mother was visited at her home every ten days by a specially trained nurse, and by a physician whenever it was necessary. Clinical consultation and physical examination and treatment for abnormal conditions before the birth of the baby and during the first month afterward were provided. In the experiment 3,192 babies were born to 3,145 mothers. Of these, 115 were stillbirths, and 86 babies died during the first month. Five mothers died, a rate of 1.5 per thousand, as against a rate of 4.9 in the city at large. This was a reduction of maternal mortality of 69 per cent.

STATE ORGANIZATION FOR MENTAL HYGIENE *

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Hygiene comprehends more than conservation of health and prevention of disease. A derivative of the Greek ὑγιής, ὑγίεια, latinized in "hygeia," it signifies soundness. In ancient mythology Hygeia, chief daughter of Aesculapius, personified health. Thus, etymologically "hygiene" is as broad in meaning as the term "health" itself, and may, properly, be used as a synonym; hence mental hygiene becomes another form of expression for mental health.

Public agencies in matters of physical health are primarily concerned with prevention of disease and promotion of health, but, inevitably, they encounter insanitary conditions, causes and consequences of disease, its disabilities and its sufferers, whose correction, relief, restoration and care become imperative duties. Nevertheless they are not designated commissions for correction of insanitary conditions or boards for infectious diseases, but are universally known as boards of health, indicative of their beneficent purpose.

In like manner, public agencies, in matters of mental health, have the same primary aims and duties as those concerned with physical health, and, likewise, inevitably are confronted with the great problems of care, provision, treatment and restoration of the afflicted with insanity, feeblemindedness and epilepsy. Is there any greater necessity for designating such agencies committees of lunacy, or boards of insanity, than for substituting commissions for correction of insanitary conditions, or boards for infectious diseases, for the acceptable title boards of health? Would not the analogy of physical health suggest the appropriateness of boards for mental hygiene?

Insanity, feeblemindedness and epilepsy are end-products. Their causes are rooted in heredity, environmental maladjustments and adverse social influences. The obvious need of the insane, feebleminded and epileptic patient appeals to humane instincts and, naturally, first found partial satisfaction in institutional provision. Time was when this summed up the total of public interest and recognized duty. It appeared to be a saving of public money to evade as much of the burden of such afflicted as might be left on the back of the individual and the family, submerged in public unconsciousness. But accumulation of end-products has gone on apace, until their increase, already enormous, presents a still graver outlook.

There is a growing conviction that the policy of evasion and inaction is unwise and uneconomical; that the roots of mental disease and mental defect must be torn out of the community; that underlying causes must be sought by investigation and unremitting quest; that the mental patient must have early and adequate treatment; that the individual and family should be encouraged to accept and seek relief from this burden by the public under suitable safeguards, because its weight is thereby lightened, its strain is less likely to break down more unfortunates, its exactions cease to impoverish, its asperities are softened by measures of alleviation, and its menace of increase of defectives is less threatening.

The separateness, up to recent date, of institutions from outside interests and activities has been notable. Their self-absorption seemed necessary, because of the specialized nature of their work, its magnitude and the scantiness of resources for its accomplishment. Gratitude and reverence are excited by the devotion and public service of founders and managers of institutions. Gradually, however, institutional workers have become conscious of the need to reach out into the community to help and be helped in the wider field of preventive and constructive effort, conscious of their almost exclusive opportunity to acquire knowledge and experience fitting them to advise and direct in such effort, and conscious of their supplemental relation to social, health, educational, charitable and reformatory agencies, that discover and minister to such needs in the community at large.

Mental hygiene is the synthesis of these institutional and communal forces in a common and inspiring purpose. It turns away from sole contemplation of degeneracy, disease and death to constructive achievement, health and life. Mental hygiene thus assumes a broad meaning, inclusive of all the duties and activities, arising out of:

1. Conservation of mental health.
2. Prevention of mental disease and mental defect.
3. Investigation of their nature, causes, consequences, and measures of treatment.
4. Interpretation and diffusion of such knowledge to the public and the medical profession.
5. Promotion of the early recognition and treatment of such afflicted by the family physician who has had, during his medical course, sufficient instruction and clinical experience in psychiatry.
6. Restoration of mental integrity and amelioration of adverse mental states by adequate hospital treatment.
7. Institutional adjustments, affording as nearly normal conditions of living as may be, to promote happiness and usefulness of patients.
8. Community organization facilitating their care at home under suitable safeguards against present dangers and future menace of reproduction of defectives.
9. Determination of the causative relation of mental abnormality to poverty, delinquency, inebriety, sex immorality, and many social evils, with a view to their prevention.
10. Provision for the care of the insane, feebleminded and epileptic in institutions, so far as necessary, and in the family, so far as permissible under supervision.
11. Interchange by humane and efficient methods between state and national governments of such dependents, in order that they may be supported where they belong and the cost justly apportioned.
12. Solution of the economic problems involved in these undertakings.

The mere enumeration of these duties and activities is impressive in its revelation of the scope and importance of mental hygiene, the complexity of its relationship, the penalties of its neglect, and the necessity of correlation of all the forces of achievement along definite lines of responsibility in a militant attack on the whole problem.

Time does not now permit an attempt at demonstration, but it is almost axiomatic, as well as in accord with the best thought and experience, that the appropriate unit of authority in these great undertakings is the state.

The presentation of a concept of state organization, principles of administration, definition of duties and spheres of responsibility in a state system for mental hygiene in its broad meaning is the purpose of this

* Read before the Section on Nervous and Mental Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

paper. In the early years of state government, these matters received but scant attention. Quite generally their supervision devolved on a single general board in conjunction with health, charitable and reformatory interests. Necessarily in small states such a combination may persist; but in the larger states, experience and recognition of the diversity of such matters, the highly specialized character, wide scope and importance of each, have impelled toward the division of such a general body into separate boards of health, boards of correction, boards of charity and boards of insanity. Hence the initial step in forming a state organization is the creation of a state board for mental hygiene.

SUPERVISION VERSUS CONTROL

What should be the relation of such a board to the institutions and activities within its field? Should it be a supervisory, or a control relation?

The principle of supervision has been established in necessity and experience. Historical fact proves that care of the mentally affected in the home, the almshouse, the county asylum or the state hospital has been unsatisfactory without it. Improvement has necessitated and followed organized state supervision.

The first conception was advisory only. The supervising body, free from direct responsibility for local administration, stood in judicial attitude. Informing itself of the truth of a matter in controversy, it defended or censured local administrators according to the justice or injustice of public criticism. It has been a tower of strength in this relation. Its advice and suggestion, often from wide observation and lifelong service, have furthered the best progress. As a medium of spreading knowledge of activities and methods of one local administration to another, it has tended to coordinate them and unify their standards. The supervisory relation is honorable and attractive to the best citizenship, philanthropic, devoted to public service, able in affairs of business, aspiring to high professional ideals, sympathetic and broad in concept of duty to the unfortunate. Such service has been unpaid and is unpurchasable. Eventually, however, two weaknesses appeared in the form of supervision originally in vogue. In some localities, particularly Western states, local boards of administration did not always rise above considerations of self-interest or friendship in institutional appointments and purchases. In other localities, even the older states of the East, the effectiveness of general supervision became doubtful.

Both weaknesses invited the same remedy, greater control by supervising bodies and concentration of powers in smaller and fewer boards. The reaction, in some instances, drove the pendulum to the far limit, the single paid board of three members, abolition of local boards of administration, centralization of powers in one small body with absolute control without organized supervision. Although such a control régime might be tolerated as a temporizing expedient to oust politics and personal self-interest, it can never be acceptable as a permanent and satisfactory mechanism of achievement in this important field. Nevertheless it has not been devoid of good results. So far as good appointments have been made and stable tenure of office maintained, bad local situations have been improved and progress started. Indeed, initial boards have generally been progressive and efficient in early accomplishment. Experience, however, is revealing certain defects and weak tendencies.

The control régime narrows the circle of friends of these unfortunates in that it abolishes local and general boards of supervision with large membership, whereby many citizens gain their first knowledge of them and, thereafter, become active and lifelong champions of their interests. Such friends widen the circle to include others of their acquaintance, quicken public consciousness of the obligation to minister to the needs of such afflicted, and stand a strong defense against unjust and destructive criticism.

Wide and sustained interest in these classes is not merely humanitarian. It lessens the public burden by encouraging benevolence in their behalf and increasing willingness of relatives to receive them back from institutions to their homes.

The control idea is arbitrary and dictatorial in its nature and tendency, less likely than the supervisory relation to foster initiative, originality and development of local efficiency; and yet virility in any system of management has its roots in the men near the patients, working out their problems and needs, originating ideas and methods for their welfare, constituting the one indispensable requisite to progress. A stream cannot rise above its source. The great, outstanding barrier to achievement in mental hygiene is poverty in men of scientific instinct and ability, thoroughly educated in arts and science, trained in psychiatry and administration, absorbed in their vocation as a life work, encouraged and spurred on by helpful supervision.

At best a general board, supervisory or control, is distant from this fountain head. Neither can be an original source of ideas nor wisely attempt to initiate activities in local units. Their usefulness is restricted largely to correlating and standardizing such activities, disseminating knowledge, coordinating extrarelations and interrelations between local units, formulating general policies and inspiriting energies.

Ascendency of the control idea has had a trend away from supremacy of medical and scientific ideals toward lay standards of mere care, housing and utilization of productive labor, within a field preeminently medical in its requirements.

The economic folly of such a trend is shown in a situation recently revealed at the Pennsylvania Hospital. A daughter of a syphilitic father, who had died in an insane hospital, was received in the early stages of juvenile paresis, due to inherited syphilis. Investigation found the mother and five brothers and sisters also infected with syphilis, doubtless from the same source, the father. In such a case the absence of the medical and scientific spirit would stop effort with the humane care of the father, but its supremacy would also afford adequate study and treatment to prevent secondary infections and possibly sixfold increase of expense and untold suffering.

Is there any real economy in the immediate saving, if such there be, which ignores causes and prevention and invites disaster in the inevitable accumulation of end-products?

Furthermore, the control idea leaves other traces of degeneracy, as instability of service, lower average grade of appointments, less average experience and training in a specialized field, increasing liability to political dominance, and utter inadequacy of central organization efficiently to perform great local functions.

Finally, has the control régime, in reality, the justification of greater economy? Ponder the conclusions

of Henry C. Wright and be convinced by reading the detailed statement of his impartial and painstaking inquiry[1] and comparison of methods and results of administration of charities and correction in three great states: Iowa, the oldest and, probably, best example of absolute control, free from politics, by prominent citizens of integrity and ability; New York, representing partial control and greatest persistence of medical standards, and Indiana, staunch adherent of the traditional board of state charities, without control powers, with only supervisory duties and the right to know, to advise, to cooperate and inspire, but, now as for many years, fortified in a membership of "men of exceptional judgment and devotion," who "selected and retained in the office of secretary" "men of marked ability, each of whom has gained a national reputation for knowledge and wisdom with regard to the management of the various classes of state institutions." Mr. Wright affirms in his conclusions, after investigation, that:

> Centralization in New York has secured low unit prices, but not economical administration of the institutions; the low unit cost has been largely offset by the delivery of goods of a lower grade than those contracted for; that Indiana secures an economical administration and very satisfactory results under the present form of supervision through the Board of State Charities. Its institutions are managed more economically and more satisfactorily than the institutions in either Iowa with complete centralized control, or in New York with a partial centralization.

IDEAL FORM OF ADMINISTRATION

Nevertheless, in my judgment, neither the pure supervisory idea, nor the pure control idea, is the best expression of an ideal form of administration. Out of present conflict will evolve a happy mean, a stable balance, safeguarding, on the one hand, against arbitrary dictation, and, on the other, against tendencies toward indecision and ineffectiveness.

The prerequisities of such an evolution are:

1. A spirit of amity and deliberation, manifest in conference and cooperation between general and local administrative units.

2. Definiteness of spheres of responsibility within such units, determined by mutual agreement or law.

3. Absolute local control of executive details within such local spheres under principles and rules of procedure, appointment, methods and standards fixed by mutual agreement or law.

4. Absolute control by the general board of extrarelations and interrelations and general policies of local units, under principles and rules of procedure fixed by mutual agreement or law.

5. Right of initiative reserved to such local unit in its sphere of responsibility, but, if not exercised spontaneously, subject to suggestion, even compulsion, by the general supervising board.

6. Requirement of approval, with right of modification and veto by the general supervising board acting under specific provisions of law, of main projects, initiated in local units, before they are undertaken.

7. Unlimited power of the general supervising board to investigate, report and recommend as to any matter within any sphere of activity in any unit.

8. All direct powers of the general supervising board specific and fixed by law.

9. Creation, if found necessary, of a special judicial body, possibly the three senior justices of the state supreme court, to interpret principles and rules and enforce its decisions, under specific provisions of law.

1. Made for the New York State Charities Aid Association in 1909.

These general principles formulated on a workable basis, extended and perfected by experience, would constitute a democratic system of state administration, stable in balance, conducive to local efficiency and harmony. It would be an adequate mechanism for the discharge of recognized public duties, but it would lack one essential element, supervision by an eye single to the public welfare, undiverted by direct responsibility, except for the truth and justice of its observations and utterances. Pure supervision within both national and state fields would be best afforded by private agencies, organized under the leadership of the National Committee for Mental Hygiene, its state societies and allied associations, such as the New York State Charities Aid Association.

Private agencies are potent in mental hygiene because they are free from politics, unfettered, and altruistic in their aims. They touch many individuals, sources of energy and financial support; they are pioneers in fields of investigation to discover new principles, test their truth and utility and encourage their adoption by public agencies in common usage. They diffuse knowledge, awaken public consciousness of needs and the obligation to meet them. They create and mold public opinion in right form, which controls politicians, legislators and other public officials. They supplement public agencies which, of necessity, are more conservative, because they are the established mechanism for accomplishing routine and essential duties, accountable for results of their recommendations, hesitant in initiative lest the confidence of the government be forfeited by advocacy of projects before their usefulness and economy have been demonstrated.

Private agencies should be sympathetic and appreciative of the difficulties and limitations of public agencies. They should bear in mind that constructive criticism, that contributes something to the solution of public problems, is the only helpful utterance.

Such private and purely supervisory agencies should have the legal right to visit and inspect institutions and all activities within each local and general sphere of responsibility.

They should be required to make, at stated intervals, reports of their findings with recommendations to the state board for mental hygiene. The value of such reports and recommendations would be commensurate with the competency of trained visitors.

Relief from political influence is the foremost requirement in any field of public endeavor. Any system of administration without it is better than the most perfect theory under its domination. Therefore the spirit of civil service should govern and protect all appointments in the field of mental hygiene.

The state board for mental hygiene should have power to divide, and redivide as changing conditions may require, the state into districts for mental hygiene, each in charge of a district board.

Each district should vary in extent and location according to existing centers of population, their prospective growth and needs, constituting a definite sphere of responsibility for all local administrative activities for mental hygiene in its broad meaning. Briefly stated, each district should have its psychiatric hospital with associated preventorium, outpatient mental clinic with social service and educational bureau; its colony with outlying arms near populous centers and family care extension into neighboring communities; its infirmary for the feeble, aged,

intractable and dangerous long resident patients suitably classified.

As the district board for mental hygiene should administer these local institutional units and community activities, and should coordinate and standardize extrarelations and interrelations and methods between them through responsible executive heads for each, so, in like manner, the state board for mental hygiene should direct the larger activities and general policies within the state as its sphere of responsibility, and should coordinate and standardize extrarelations and interrelations and methods between districts for mental hygiene, with other states and the national govern-ngent, in conformity to the general principles before enunciated.

State and district boards for mental hygiene should be appointed, constituted and organized substantially alike. Each board should have a membership of four men and one woman, or, possibly five men and two women, for terms of five or seven years, respectively, nonpartisan in politics, if possible, but otherwise drawn in equal number, so far as practicable, from dominant parties.

All members, except the chairman, should be appointed by the governor and be removable by him for cause; and such members should receive no compensation for services but payment for expenses actually incurred in the discharge of official duties. The chairman of each board should be its chief executive officer, a physician, expert and experienced in psychiatry and mental hygiene, and paid an adequate salary. The chairman of the state board should be appointed by the governor, but only on nomination of a majority of the other members of the board. The chairman of a district board should be appointed by the board, but only after approval of the state board.

All other appointments should be subject to civil service and made only on nomination of the chairman with approval of his board, either specific or as prescribed by its established rules.

General methods of administration and supervision by each board should conform to accepted rules of efficient management in general. Executive details should never be touched by superior authority except through the executive head responsible therefor, recourse for efficiency and control being had to advice, instructions, or, if necessary, removal of such executive head.

Acquisition and accurate comparison of facts, ascertained and verified by expert investigators in each main field, are the potent agencies of supervising authority for developing efficiency and uniformity of methods and standards. They inform, appeal to intelligence and reason, are constructive and helpful. They eliminate personality and necessity of dictation and command cooperation. Rarely, if ever, will they fail in achieving a legitimate purpose.

The state board should hold regular and frequent conferences with district boards and district executives for interchange of knowledge and experience and their accurate comparison, out of which it should formulate and establish general policies, standards and methods under a uniformity which would recognize, in measurable terms, real differences and inequalities of local conditions.

In organization for its own work the state board should provide for a support bureau headed by a psychiatrist, trained in matters of settlement and support, whose agents should investigate, in every instance, the claims for support of all patients admitted to state institutions under its supervision. All patients found to be unjustly public charges should be removed to other states and countries, where they belong. In like manner the financial ability of patients and their relatives legally liable for their support should be ascertained, of whom such amounts should be collected as they could pay without hardship. Such investigation should not be allowed to delay the care of patients, but should be made after their admission to institutions. Interchange of patients between districts for mental hygiene should be in charge of this bureau.

The inception of a new institution should originate in the establishment of a new district for mental hygiene by the state board. Thereafter, as in existing districts, the newly created district board for mental hygiene should take the initiative and responsibility, under the principles before enunciated, in the location, planning and construction of institutional units and buildings, subject, however, to approval, modification or veto by the state board, acting under specific provisions of law and the general policy established by it, as before described, in conformity to standard specifications as to arrangement, plan, capacity, space allowance, kind and qualities of materials, etc., in such definite terms as would assure uniformity for like conditions and purpose. This would require a competent supervisor of construction as an officer of the state board.

The state board should inaugurate a policy of initiative and adequate performance of its functions through expert investigation and supervision within the various fields of activity for mental hygiene in the state and its districts.

Such a policy would necessitate a trained psychiatrist in the medical and clinical field; a scientific director of laboratories, medical and psychiatric research; a chief of social service; an expert accountant as supervisor of accounts and classification of expenses.

Economical purchase and use of supplies should be standardized by a representative committee, composed of the chairman of the state board, its supervisors of accounts and construction, and the chairmen of district boards, superintendents of district institutional units and district stewards. The district stewards, under the chairmanship of the state supervisor of accounts, should be the executive agency of the committee, whose other members should constitute the supervisory body.

Ceaseless quest should seek the highest standards of medical, scientific and economic efficiency.

Strictest economy consistent with such standards should govern public expenditure, because public funds for such purposes are limited, being rarely sufficient for bare necessities, and should be held as a trust for the unfortunate. To sum up, the faulty planning and locating of institutions; all construction other than that which is plain and simple in design and pleasing in proportions; all overornamentation; failure to attach the chief importance to spacious, durable, sunlit buildings suited to the need; waste in administration; extravagance and graft in any form — all these must be abolished, since every dollar wasted is wrung out of the patients, their health and comfort, their living space, facilities for their treatment, knowledge of their malady, and its prevention and cure. Lack of provision for such afflicted is almost universal, and their overcrowding in existing institutions is extreme in most states. Such overcrowding is, prob-

ably, the greatest hamper to their proper treatment and the gravest menace to their safety and welfare. Elimination of waste would go a long way in relief of this condition.

Scanty expenditure, however, should not be mistaken for wise expenditure. It is foolish to scrimp in original cost by impairment or deprivation of facilities and convenience of work. A small administrative leak continuous for years will more than offset large initial outlay to prevent it.

The field of mental hygiene is broad and rich in opportunity. Its cultivation with diligence, forethought and economy would yield abundant harvest for the public welfare; but there are seeds and roots of evil with momentous portent, unless found and removed. The state and district boards for mental hygiene hold the plow and should strike deep in furrows of investigation, search out causes and needs, formulate the practicable plans and policies to remove or satisfy them, arouse public consciousness of the obligation as well as expediency of action, and constitute always the sustaining energy of achievement.

ABSTRACT OF DISCUSSION

Dr. Adolf Meyer, Baltimore: If there are practical outlets such as Dr. Copp has depicted, it will be a great help in making the medical student feel that he is working toward a well organized field, and that he will not have to make his whole career for himself or depend on the present limited system of institutional psychiatry alone.

Dr. E. E. Mayer, Pittsburgh: Dr. Copp's subject has such a practical aspect that I wish to emphasize that everybody should take home these ideas with him and work them out wherever there are state boards of insanity. These boards everywhere are considered to be dealing only with derelicts. The public is apt to look on a man as finished when he is put into an asylum. A board of mental hygiene would look on the whole question with a different attitude and the public would see the broader problems of prevention and treatment. I believe Dr. Copp does not desire to eliminate established commissions and boards of insanity, but merely to enlarge their scope by a change of name. Let us hope that added responsibility will be given to them also.

Dr. L. M. Crafts, Minneapolis: I do not know what the scheme of arrangement of the different parts of the speaker's plan would be, as Dr. Copp did not have time to go into that in detail, but one important matter would be close articulation with the school board in every city and town, including a large element of control of the activities of both teachers and pupils. Our school curriculums are overcrowded now, and our colleges and many school boards are advocating and moving toward all-year sessions. This would subject even normal children to nervous strain, endangering their stability, and be entirely beyond the endurance of the neuropathic child.

Dr. Owen Copp, Philadelphia: The main idea of my paper is that when we begin to talk of insanity, feeblemindedness and epilepsy, every one is depressed; but when we talk of mental hygiene it encourages the profession and the public to cooperate.

Birth Returns and the War.—The experience of the nations at war has brought home the fact that war makes orphans. It seems but fair, and one of the least of the things we might do for those who will give their lives for the nation, that we see to it that their children shall in later years be able to prove their parentage, their right to pension and inheritance, and their wives the right to widows' pensions for the rearing of the children in their own homes. The prompt registration of every birth that occurs in the state becomes a patriotic duty, which no physician or midwife can in conscience shirk.—H. Chalmers, M. A., (New York State) *Health News.*

EXOPHTHALMIC GOITER AND OTHER FORMS OF PATHOLOGIC KINETIC DRIVE *

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Among the total of 2,169 operations for goiter which have been performed by my associates and myself, 1,020 have been for exophthalmic goiter. This statement at once suggests the query, On what basis were the cases of exophthalmic goiter differentiated from the other forms of goiter? Our rule has been to class as exophthalmic goiter every case in which, at the time of operation, there are symptoms of increased basic metabolism not due to any current exciting cause, and in which these symptoms are relieved or cured by diminishing thyroid activity.

THE RÔLE OF THE THYROID IN EXOPHTHALMIC GOITER

Among our cases we have seen no normal thyroids, hyperplasia being present in about 70 per cent.; most of the remaining 30 per cent. being adenomas, with a few colloid goiters (Marine, Graham).

That hyperplasia is not a cause but a concomitant effect of exophthalmic goiter is shown by the following facts of the total number of cases of hyperplasia of the thyroid at this moment existing in the United States, only a small, almost a negligible, percentage are co-existent with exophthalmic goiter, for hyperplasia of the thyroid is incident to pregnancy, to adolescence, to many infections, especially tuberculosis, and to cretinism. Hyperplasia of the thyroid is no more the cause of exophthalmic goiter than it is the cause of pregnancy, of tuberculosis or of adolescence. In each and all of these conditions, hyperplasia is an end-effect, not a cause. Here the analogy ends, however, for although resection of the thyroid does not terminate pregnancy, does not cure tuberculosis, does not modify the phenomena of adolescence, it does improve or cure every case of exophthalmic goiter.

If the thyroid does not initiate exophthalmic goiter, then by what means does its excision improve or cure the disease? We have elsewhere pointed out that any excitant of increased basic metabolism, emotion, exertion, infection, etc., when acutely applied, aggravates exophthalmic goiter, and the more intense the case of the disease, the more is it affected, and conversely, the greater the deficiency of the thyroid, the less effective are such excitants as emotion, exertion and infection, the effectiveness of these excitants diminishing progressively with the deficiency of the thyroid to the neutral stupid state of myxedema.

In other words, as the thyroid governs the rate of energy transformation, therefore as the thyroid activity is diminished, the range of metabolic activity will be diminished also.

THE RÔLE OF THE SUPRARENALS IN EXOPHTHALMIC GOITER

The excitants of increased metabolism lead to increased thyroid activity; but, as we have shown elsewhere, they cause also an increased output of epinephrin. Moreover, the symptoms of exophthalmic goiter are identical with those produced by the com-

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

bined administration of epinephrin and of thyroid extract, plus those due to the deterioration produced by the disease in certain organs. Among organs thus damaged are the heart, the brain and the liver. How then, shall we decide which symptoms are due to the suprarenals and which to the thyroid? Epinephrin increases basic metabolism, as is evidenced by increased temperature; it increases the force and frequency of the heart beat, increases the blood pressure; throws the blood from the inner larger arterial trunks to the periphery; dilates the pupils; produces sweating, and increases respiration. But epinephrin alone does not lower the thresholds of the brain; does not cause nervousness and does not cause trembling or insomnia. These are caused by thyroid secretion. These two groups of phenomena, together with the modified function of damaged organs, as the liver, heart and brain, make up the sum total of exophthalmic goiter.

MODIFICATION OF THE KINETIC DRIVE

Neither the suprarenal nor the thyroid has any direct communication with the external or the internal environment except through the nervous system and through hormones. Both the suprarenals and the thyroid respond adaptively to changes in the internal and the external environment through the mediation of the nervous system and hormones; therefore the kinetic drive may be modified in four different ways:

1. By eliminating or diminishing the external and the internal driving stimuli.
2. By depressing the sensitiveness of the nervous system.
3. By diminishing the amount of thyroid tissue.
4. Probably by diminishing the suprarenal tissue.

There are no other organs or tissues that can be controlled in like manner by modifying the internal and the external environments. Therefore in the interrelation of the suprarenals, the thyroid and the nervous system, we may find the key not only to the pathologic physiology of exophthalmic goiter, but also to certain fundamental normal physiologic processes as well.

If an individual with exophthalmic goiter could be made to hibernate like a bear he would probably come out cured; for when the driving mechanism, the brain, rests, then the organism as a whole rests; and if the rest is long enough, certain pathologic states tend to revert to the normal state.

If the thyroid activity is depressed by the ligation of arteries and nerves, by destructive injections or by excision, then the activity of the nervous system at once slows down, because the fabrication and output of specialized activating products is diminished and in consequence action currents will be diminished. Consequently the power of the brain to drive the various organs of the body is diminished, and by so much is the drive diminished.

OTHER FORMS OF PATHOLOGIC KINETIC DRIVE

Worry, fear, grief, infections, overwork, adolescence, autointoxication, etc., are the common exciting causes of exophthalmic goiter. Any one of these excitants may just as readily cause neurasthenia, cardiovascular disease, cardiorenal disease or diabetes. Let us consider that protean disease neurasthenia. It is produced by environmental stimuli that give rise to exophthalmic goiter; it is relieved by rest by controlling work, by eliminating worry, infection, autointoxication, etc. If the exciting causes of exophthalmic goiter and neurasthenia, and the medical treatment are practically identical, what then is the essential difference between neurasthenia and exophthalmic goiter? In many cases of pathologic drive the diagnosis by one physician will be light exophthalmic goiter, by another neurasthenia. It may be compared to the distinction between wealth and riches — they are apparently varying degrees of similar processes. If the foregoing is true, then it should follow that in exophthalmic goiter as well as in neurasthenia the symptoms will be mitigated by excision of a part of the suprarenal tissue. That this is probable is indicated by the early clinical results in five cases of neurasthenia in which one suprarenal and the anatomically excessive thyroid tissue were excised. It is still too early to reach any final conclusion. The course pursued in these cases is reported here only as a suggestion for further study, and does not stand as a recommended treatment. Among the other phenomena noted was the almost complete and immediate disappearance of the excessive sweating. From the clinical data in certain cases of exophthalmic goiter, therefore, in which resection of the thyroid was followed by increased nervous stability and increased body weight, while there remained a flushed face, sweating and an increase in the frequency and force of the heart beat, we may infer that while the thyroid symptoms of the disease were relieved, the suprarenal group persisted. It may be that the excision of part of the suprarenal tissue will supply the complete cure for such cases as these. Certainly in this study may be foreseen a possible explanation and treatment of the end-results of the overdriving of the organism.

NOTE ON THE OPERATIVE TREATMENT OF EXOPHTHALMIC GOITER

Let us now return to the all inclusive and protean kinetic drive — exophthalmic goiter. These hypersensitive patients may be killed by fear, even by worry; by light infection; by moderate work; by slight injury, or by surgical anesthesia; hence they require anociated treatment in the broadest sense, and in severe cases the operation itself must be graded. These frail and explosive patients are carried through the operation most securely as follows: by the highly specialized nurse anesthetist whom the patient securely trusts and does not fear; by local anesthesia with novocain; by feather edge dissection; by gentlest handling. In the most serious cases not only the first but each step of the graded operation is performed with the patient in bed — ligation in bed, lobectomy in bed. The operating room goes to the patient. Moreover, in serious cases we now leave the wound open, guarding against infection by applying dressings moistened with neutral solution of chlorinated soda for from twenty-four to forty-eight hours, the wound being then closed under analgesia in bed. That is to say, we literally make operating "rounds," giving a devitalizing injection of hot water or of quinin and urea hydrochlorid here; doing a ligation there; performing a lobectomy in another room; closing a wound in still another. And with each additional precaution, with each anociated step goes a still further lowering of the death rate and of postoperative disturbance. In turn we can successfully handle patients who are moribund; all patients thus managed experience more prompt and secure clinical results; and finally other patients, with the assurance of safety and of slight

discomfort, come with tranquillity instead of dread.

With the progressive unraveling of the mysteries of pathologic physiology in the clinic and in the laboratory, we see appearing more and more clearly a new conception of surgery and physiology, based on total behavior and biologic adaptation. On this basis, health and disease differ only in that health is the result of complete adaptation, while disease implies a failure to achieve complete adaptation.

EXPERIMENTAL HYPERTHYROIDISM *

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The fact that nitrogen elimination is much increased by administration of the thyroid hormone suggests that one method of investigating thyroid activity would be to study the results of an intense nitrogen metabolism.

About a year ago, I began to administer amino-acids to animals with an accurately timed intravenous injection extending over many hours. During the first part of this investigation the animals were kept under ether and were thyroid-parathyroidectomized. The active constituent of the thyroid was given sometimes at the beginning and sometimes after the injection had proceeded for some time. Later, the animals were trained to lie quietly on the table and were injected without pain and with no distress symptoms, by inserting a needle into the external saphenous vein. Animals may be injected in this manner for many hours under ideal physiologic conditions.

A review of all the data obtained after the injection of more than 100 animals shows that the results may be placed in two groups. In the first group, which comprises a very small number of the total, a typical result was as follows:

1. A continuous and extremely large flow of urine.

2. A temperature that did not drop below normal at any time, and when the maximum reaction was attained, would rise very high, sometimes as high as 114 degrees.

3. A pulse always regular, strong, and increasing in rate, possibly with tachycardia, and, as a maximum response was reached, ranging from 300 to 350 and above.

4. The respiration deep throughout. As the severity of the reaction increased, the respiration became panting. In the crisis it was very rapid and vigorous.

5. Sensitiveness of the animals to touch. At first these animals were not sensitive to touch. As the injection proceeded there would be muscle twitchings and tremors, always beginning in the foreleg, the neck muscles, the eyelids and the facial muscles. These slight tremors slowly increased in vigor and frequency until, by a gentle touch with the hand, a violent general tetany would be produced, or a convulsion with rigidity of every muscle, opisthotonos, etc. During the spasm the respiratory muscles were contracted and involved in the general convulsion so that the animal became cyanosed. The general picture could not be differentiated from parathyroid tetany, idiopathic tetany, or from certain phases of epilepsy.

Necropsy of these animals frequently showed hemorrhages throughout the muscles, hyperemia of the intestines, a suprarenal so hyperemic that it resembled a blood clot, a thymus so engorged with blood that it was liver-colored, and a pituitary in the same condition as the suprarenal.

The second group of results, comprising by far the majority, obtained by injecting amino-acids into dogs, was in the typical cases the direct opposite of the first group described:

1. The urine was always of small volume and generally acid.

2. The temperature remained normal if no anesthetic was used. If ether was given, the temperature sometimes dropped as low as 92 degrees.

3. The pulse was very slow, irregular and feeble.

4. The respiration was feeble and indifferent throughout.

5. The animals never became sensitive to touch. They did not show twitches or tremors, and instead of a touch producing tetany, they were difficult to arouse.

It will be seen that, in the first class, there was a violent and extreme reaction resulting in crisis and death. In the second class, there was no less a reaction to the injection but the result was profound depression. All degrees of intensity and combinations of these two types of reaction have been obtained. The animal may at first be depressed and only slowly and gradually develop a vigorous response with tetany, etc., or, occasionally an animal will show a quick and fair reaction, which will pass off and be followed by depression. Some animals will withstand an injection of amino-acids for many hours, and show neither depression nor excitation. One dog has been injected three different times, once for ten hours, and is still well and apparently normal. The question arises: What are the factors determining which effect the injection of amino-acids will produce? One factor is the diet. If the animal has been heavily meat fed, the result of an injection of amino-acids is depression. If the animal has had a diet poor in meat and has been starved for from twenty-four to forty-eight hours, an active response may be expected.

The influence of the thyroid hormone was, when first considered, very confusing, disappointing, and in fact, paradoxical. The most constant condition in so-called hyperthyroidism is an increased metabolism and increased irritability with no signs of depression. It was, therefore, surprising to find that if an animal was injected with the thyroid hormone previous to the injection of the amino-acids, the result was not an active response, but a decided depression. I have never seen an immediate response to the administration of the thyroid hormone in any animal. This is true of normal animals and of those being injected with amino-acids.

The general conditions which it is possible to produce by an intense nitrogen metabolism having been established by a large number of experiments, steps were taken to try to find a cause for these conditions in some chemical constituent of the blood and urine. The most striking difference in the urine between the two groups of physiologic response is the volume. The volume of the urine of an animal injected with amino-acids that is responding may be enormous. One dog of 11 kg. actually passed 1,740 c.c. in one

* From the Mayo Clinic.
* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

hour. The next abnormal finding in the urine is the percentage of the total nitrogen in the form of urea. Urea normally forms 80 to 85 per cent. of the total nitrogen in urine. The urea in the urine of dogs in a toxic condition may be as low as 15 per cent. of the total nitrogen. With the low ureas it was found that the percentage of ammonia was, as a rule, very low. The importance of these observations concerning the ammonia and urea was not at first realized, but after many dogs had been injected it become apparent that the toxic symptoms in the animal were always accompanied by a very low percentage of the total nitrogen, as urea and ammonia, and an attempt was made to relate this finding with the tetany.

One explanation of the constant relation between the tetany and the low urea and ammonia in the urine could be that there is some substance (let us say x) which is an intermediate compound between ammonia and urea, and this substance is highly toxic to the animal organism. If the substance x were produced from ammonia faster than it could be converted into urea or other nontoxic compounds, it would increase in its concentration in the body to the point of producing toxic symptoms. In all the work concerning continuous injection of amino-acids into dogs, ammonia and urea were determined within ten minutes of the time the samples were collected. Now, if the urine from dogs with toxic symptoms contained some substance, x, which would be converted into urea in the body, would any of this substance be converted into urea outside the body simply by allowing the urine to stand? This was tried, and to our surprise and satisfaction it was found that on redetermining the urea after the urine had stood twenty-four hours, the amount had increased as much as 100 per cent. At the same time the ammonia did not change, and in some cases it was somewhat lower after standing twenty-four hours than when at first determined. It was further found that the increase in urea on standing roughly paralleled the toxic condition of the dog. By means of a very high rate of nitrogen metabolism and an extreme diuresis, we had succeeded in separating one of the intermediary compounds in the formation of urea. Furthermore, there is the strongest evidence that this pre-urea compound is concerned in the production of the toxic symptoms by an injection of amino-acids.

Having related the violent reaction and tetany of the first class of reactions to the pre-urea compound, it was not at all difficult to show that in the second class when there was apathy and depression, there were not only no traces of the substance x but the ammonia content of the blood and urine was very high.

Therefore, it seemed probable that the greatest factor in determining which type of reaction any animal would give was whether or not ammonia could be properly metabolized. If the conversion of ammonia into substance x proceeded too slowly, resulting in a high concentration of ammonia throughout the body, depression resulted; if ammonia was converted into substance x too rapidly, faster than it could be converted in urea, irritability and tetany resulted.

Although not yet proved beyond controversy, it seems probable that the agent by which ammonia is supplied to the body is the thyroid hormone. We have some evidence that the agent converting the pre-urea substance into urea is the parathyroid. We were, therefore, prompted to look among the other ductless glands for the agent which converts ammonia into substance x. All that is known of hyposuprarenal activity suggested that the probable source of the agent which converts ammonia into the pre-urea compound is the suprarenal cortex. The depression and loss of nerve tone and terminal intoxication following suprarenalectomy somewhat resembles the results in which depression was produced on injection of amino-acids. On the other hand, the great stimulation, the increase in the tone of the nerves finally resulting in irritability and tetany, filled out the requirements for an excess activity of the agent that converts ammonia into substance x. Could not these two extremes be explained by hypo-activity and hyperactivity of the suprarenal cortex? We, therefore, tried to determine whether or not the suprarenal cortex could convert ammonia into substance x. A cat was etherized; the blood and suprarenals were removed and a small amount of ammonium carbonate was added to the suprarenals and to the blood, the suprarenals being ground in physiologic sodium chlorid solution. The blood converted a small amount of the ammonium carbonate into something not urea. The suprarenals, even in high dilution, converted practically 100 per cent. of the ammonium carbonate into something not urea.

Thus, on our first attempt, we apparently demonstrated that the suprarenal cortex furnishes an enzyme which, in the tissues and even in the blood, is capable of converting ammonia into something not urea. Other cats were treated similarly. Their blood, suprarenals, muscles and liver were tested in the same way. Entirely negative results were obtained for all these tissues. Finally, suprarenals from beef, freshly killed, were tested. Not only did the suprarenals fail to convert any ammonium carbonate, but the suprarenal substance itself contained a small amount of ammonia. We, therefore, had one strikingly positive result and a number of negative results. For some days we were perplexed and disappointed. It suddenly occurred to me that the conditions under which the first animal had been killed were somewhat abnormal. I was not present in the room at the time, but a chance remark recurred to me that there had been two dogs in the room when the cat was brought in; that these two dogs had frightened the cat and had barked at her for possibly ten or fifteen minutes. The cat was then placed under the etherizing jar, immediately etherized and the suprarenals removed. The possibility, therefore, still existed that the first results were correct and that the suprarenal cortex showed its activity only after it had been stimulated, in this case by fear. The generous frightening of other cats rapidly followed and we soon repeated the first results. In the blood, in the suprarenals and in the tissues of some of these cats, large amounts of the enzyme which acts on ammonium carbonate were present. We then tried electric stimulation of one suprarenal and not the other, and here again in the first animal experimented on we produced a distinct activity in the suprarenal which had been stimulated, while the other was without activity. Subsequent attempts to repeat this have shown that the stimulation of the suprarenal by electric impulse is difficult to accomplish. We have tried various other means of stimulation. Etherizing an animal with the cone, allowing the animal to struggle, produces but slight increase in suprarenal activity as shown by the blood, but more activity does result if a series of etherizations is carried out.

It is known that animals that have had the nerves supplying the suprarenals severed do not die as a result of the operation. Therefore, the suprarenal must be stimulated by some substance in the blood as well as through the nerves. If it is the function of the suprarenal cortex to act on ammonium carbonate, it would seem probable that ammonium carbonate in the blood is the substance which stimulates the gland. We, therefore, tried to inject ammonium carbonate into the blood directly. Instead of producing the desired toxic condition with increased sensitiveness to touch and tetany, in some cases following the injection of ammonium carbonate, we produced the profound depression, cyanosis, and all the symptoms presented by the second group of results mentioned in connection with the injection of amino-acids. Analysis of the blood showed that a large amount of ammonia was present. The significant condition in the animals injected with ammonium carbonate, linking them with those animals that did not respond to the injection of amino-acids, was the respiration. When ammonium carbonate is injected into an animal, the respiration becomes either feeble and indifferent or else deep and vigorous. It seems highly probable that ammonium salts of other acids than carbonic cause the depression, and that as long as these acids are not oxidized and burned to carbonate, the animal continues in a state of depression and the suprarenals are not activated. When, however, ammonium carbonate reaches the suprarenal, it produces a vigorous stimulation.

Unlike the thyroid whose active constituent, the iodin compound, is normally present, and unlike the suprarenal medulla whose active constituent, epinephrin, is normally present, the active constituent of the suprarenal cortex cannot be demonstrated in normal animals except after the gland has been stimulated.

Concerning the conditions which must be present before the suprarenal cortex manifests its activity, it seems essential to have a vigorous oxidation going on within the animal. An animal with a feeble, indifferent respiration and a slow pulse responds to an injection of ammonium carbonate with the state of depression. In an animal that is maintaining a high degree of metabolism, although the first injection of a small amount of ammonium carbonate may not produce a violent tetany, there is, however, an unmistakable response. The respiration immediately becomes deep and more rapid, there is an increase in the pulse rate, slight restlessness and irritability.

These two types of reaction are accompanied by very conclusive chemical evidence, that is, in the first case the urine contains a large amount of ammonia and in the second instance only traces. We can now follow the condition of the animal in the chemical laboratory, two floors removed from the experimental room, in which the animal is being injected, and while we cannot determine the intensity of the reaction, a glance at the analyses of the urine for ammonia and urea is sufficient to tell whether the animal is going into a tetany or a state of depression.

In an animal recently injected, the urinary ammonia was found to be high. It suddenly decreased, remained at a lower figure for three quarters of an hour, and then rapidly increased to a larger amount than before the drop. Inquiry as to the condition of the animal showed that just at this time it had gone through a violent spasm of tetany followed by an improvement which was later followed by a state of depression.

Many of the most puzzling results obtained in the first months of this investigation are now explained. The reason dogs with a high protein intake always went into a state of depression is they did not convert the ammonia into the pre-urea compound fast enough, that is to say, the suprarenal cortex was not in an active state. The fact that the injection of the thyroid hormone previous to the injection of amino-acids produces a result of depression is explained in the same way. It furnishes evidence that thyroid activity in the absence of a simultaneous suprarenal cortex activity does not produce the usual so-called hyperthyroid symptoms but, instead, a condition of depression. It has long been noted that the administration of the thyroid hormone produces a great variety of clinical results. Some persons are extremely sensitive, responding to very small amounts, others are very resistant. There are on record certain cases of chronic nephritis in which the administration of the thyroid hormone produced a profound depression, a state of uremia and death.

In order to obtain a so-called hyperthyroid reaction, hyperactivity of the thyroid is only one result that must be produced; accompanying this, increased activity of the suprarenal cortex is just as essential.

THE CONSTITUTIONAL DISTURBANCES WHICH COME WITH CHRONIC GOITER *

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The most dramatic thyroid problems surround the subject of exophthalmic goiter. The overwhelming character of this malady creates profound impressions on those who observe it, and continually leads to exhaustive studies and paintaking investigations in an effort to master its problems. We may sometimes turn from those who are overwhelmed by excessive toxins to those who live year after year with diminished efficiency and curtailed activities because their thyroids are abnormal. Those who suffer from chronic goiter often need attention as definitely as those who have distinct exophthalmic goiter.

In October, 1915, I reported a study of 137 goiter patients treated by members of the surgical staff of the Roosevelt Hospital. Twenty-five of these patients were classed as showing toxic symptoms in the course of chronic goiter. Since that time I have operated in twelve additional similar cases. This group of thirty-seven cases, selected from a total of 181, represents as fair a selection as can be made and gives for study a definite group which is large enough for the purposes of this paper.

The average noticed duration of the goiters in the patients studied was ten years; the average duration of the more disturbing symptoms was one and one-tenth years.

During the earlier period of their goiters, the patients were disturbed by the mechanical presence of the growth, by its unsightliness, and perhaps by

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

its pressure. They may also have had diminished capability in following their ordinary occupations without realizing it.

During the later acute period, they were distinctly incapacitated for vigorously following their ordinary duties. The pulse was usually accelerated, they tired easily, and were "nervous," uneasy and apprehensive. Some had slight tremor; others had various digestive disturbances; most of them had increased discomfort from the presence of the goiter and felt various degrees of pressure on the trachea and adjoining parts of the neck. According to the commonly accepted standards, these were not cases of exophthalmic goiter, yet the patients were more or less incapacitated. Most of them attended to duties of some sort but were incapable of prolonged and continued exertion without undue fatigue.

Patients of this type have been observed and described during the recorded period of goiter study and goiter treatment. Pierre Marie,[1] Charcot and Gautier may be mentioned among those who make reference to them. Möbius classed goiters which had become associated with exophthalmic goiter symptoms as "formes frustes" and differentiated them from fully developed exophthalmic goiter. He also distinguished primary and secondary exophthalmic goiter; the former developing with a thyroid gland previously normal, the latter developing in connection with a chronic goiter. His secondary cases were usually chronic and often incomplete.

Kraus has described the goiter heart, and Stern considers chronic goiter patients, with tachycardia and irritable heart, as incomplete forms. Kocher asserts we can produce exophthalmic goiter by giving iodothyrin in excess to goitrous patients. Berry[2] discusses the subject of secondary exophthalmic goiter, applying the term to the incomplete forms considered above. Plummer[3] states that a young person with adenoma of the thyroid has a definite chance of developing at a later time symptoms so similar to the syndrome associated with hyperplastic thyroid that the best trained diagnosticians are constantly confusing the two conditions.

It is thus evident that our little group of patients corresponds closely to similar groups which have been described by numerous observers.

It is difficult to distinguish those symptoms which arise primarily from thyroid disturbances from those which are the result of other influences. It is possible for patients to have functional or organic cardiac disease from causes not associated with the thyroid. Different forms of indigestion and asthenia may come from various causes. The menopause is particularly a time when various functional disorders occur, and in the group of thirty-seven cases there would, of necessity, be some patients in whom a thyroid enlargement had less constitutional effect than in others.

The pathology of these goiters is interesting. Wilson[4] has made exhaustive studies on this subject. He states that the thyroid from a patient who has developed exophthalmic goiter, with exophthalmos, after years of simple goiter, shows advanced colloid change in most of the glands and scattered areas of hyperplastic parenchyma; that the thyroid of a patient who has symptoms of thyrotoxicosis slowly developing through a period of years, with a preponderance of cardiac symptoms and little or no exophthalmos, usually presents diffuse adenomatosis, or encapsulated multiple adenoma (usually fetal), or regenerations of previously atrophied parenchyma. But such cases are not true exophthalmic goiter.

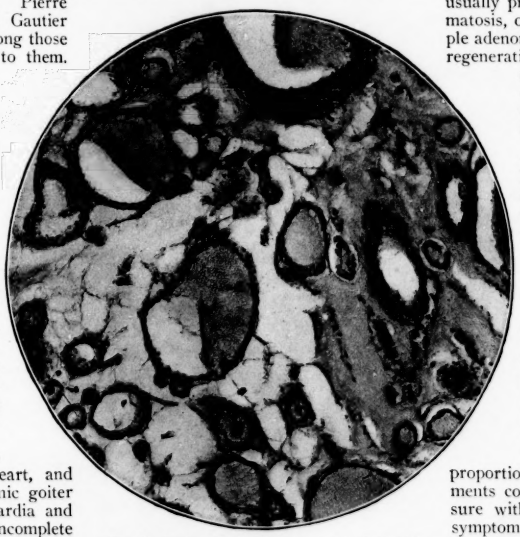

Fig. 1.—Section of thyroid from a girl of 19 whose goiter had been present for three years or more. She had a pulse of from 100 to 120. The patient in this case and in the case illustrated in Figure 2 rested, preliminary to operation, side by side on the same ward balcony and seemed about equally ill.

With the aid of Drs. Mortimer Warren, Baldwin Mann, William B. Clark and William C. White, we have studied the microscopic sections from these thyroids. Colloid has regularly been present in large amount, and epithelial elements in various degree, but in no instance were they sufficiently hyperplastic to resemble the thyroids of exophthalmic goiter. The proportions of the epithelial elements corresponded in a measure with the severity of the symptoms, but there were many exceptions to this rule. Some of the most severe cases showed very scanty epithelium and abundant colloid in the examined parts.

There are many methods of treating such patients. Rest, without doubt, is very important. Various forms of medication, the Roentgen ray, boiling water injections, and different forms of hygienic procedures are in common use. But an increasing number of patients are seeking relief in surgery. The safety of the operation and the quickness of the result appeal to them strongly.

The main purpose of this paper is to study the results of operation on this group of patients. About two thirds of the enlarged glands were removed at these operations. The posterior capsules and adjacent part of gland tissue were regularly left in position.

1. Marie, Pierre, cited by Falta, Wilhelm: The Ductless Glandular Diseases, Philadelphia, P. Blakiston's & Co., p. 95.
2. Berry: Lettsonian Lectures, Lancet, London, March 1, 1913.
3. Plummer: Am. Jour. Med. Sc., 1913, **146**, 793.
4. Wilson, L. B.: Northwest. Med., January, 1913; Am. Jour. Med. Sc., **146**, 780.

In one instance, boiling water was injected according to the method of Porter, and with excellent result.

In studying the later histories of this group of patients:

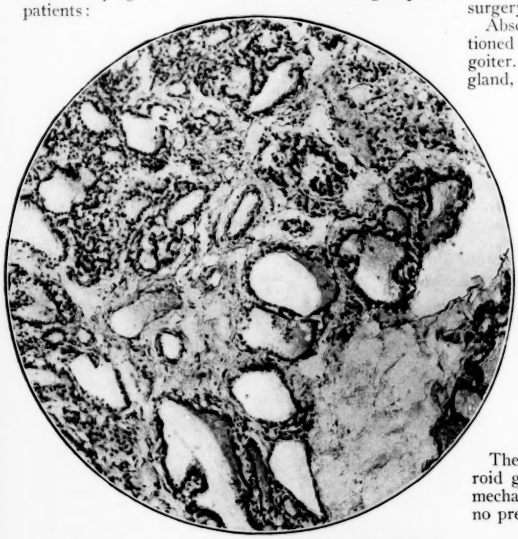

Fig. 2.—Section of thyroid from a girl of 19 whose goiter had been present for three years or more. She had a pulse of from 100 to 120. The patient in this case and in the case illustrated in Figure 1 rested, preliminary to operation, side by side on the same ward balcony, and seemed about equally ill. This patient, however, had a slower convalescence than the other girl.

One has been observed fourteen years; one has been followed into the fifth year; five have been followed into the fourth year; six have been followed into the third year; twelve have been followed into the second year, and seven have been followed into the first year.

All made good recoveries from the operation. Twenty-seven were reported free from symptoms and in excellent health; eight are very greatly improved; two, respectively, eleven and four months after their operations, are still resting, and are far from well. One of these two had very complex symptoms, including attacks of migraine which could not be referred to the thyroid. The symptoms of the other resembled those of exophthalmic goiter, although her goiter was of long standing and was reported colloid. In one or both of these cases something besides the thyroid was influential in producing the symptoms.

The group then shows: 73 per cent. apparent cures; 21.6 per cent. marked improvement, and 5.4 per cent. slight improvement.

There have been some very remarkable patients in the group, patients whose symptoms were really severe. They were fast becoming a burden to their friends and to themselves, but have been so restored to health as to be practically in their former normal condition.

Dr. Charles H. Mayo has called attention to the fact that some of these patients pass into the very worst type of exophthalmic goiter, and I can verify this by personal observation. If the development can be stopped by a simple operation in the early stages of this change, it is an important achievement for surgery.

Abscess of the thyroid gland should also be mentioned in considering the complications of chronic goiter. The abundant blood supply of the thyroid gland, and its common degenerations, would lead one to expect evidences of blood borne infection. Such evidences, however, do not appear as frequently as in the kidney, or even in the parotid salivary gland, but they do appear occasionally.

Among our thyroid patients there have been four such examples. One was fatal from an overwhelming streptococcus infection; two others had very severe constitutional symptoms, but finally recovered after liberation of the pus; the fourth, who came to the hospital earlier than the other patients, illustrated the development of staphylococcus infection in chronic goiter. After two weeks of increasing tumefaction, fever and discomfort in the neck, the thyroid showed a large intracapsular abscess in each lobe. There was no apparent communication between the abscesses. A large portion of the glandular tissue was destroyed by the suppuration. Prompt recovery followed the opening of the abscesses.

These cases illustrate the vagaries of enlarged thyroid glands. Such growths may prove to be merely mechanical nuisances, pressing where there should be no pressure, and becoming large, unsightly and heavy.

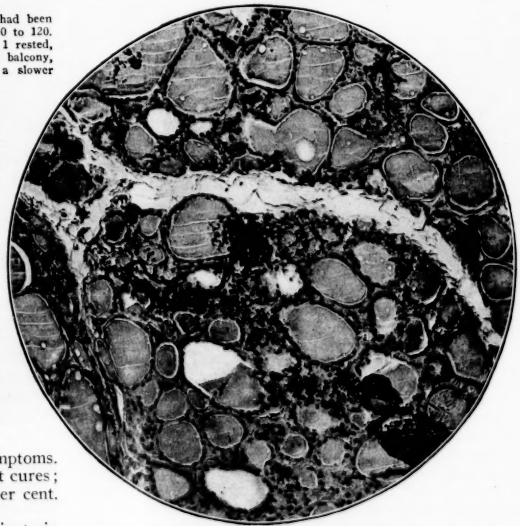

Fig. 3.—Section of thyroid from a woman of 27; five years' enlargement. She had a pulse of 130. There was slight exophthalmos, and decided, but not extreme, loss of strength. There was a marked temporary reaction from partial thyroidectomy. She made a satisfactory recovery. The pulse remains at about 80.

They may be accompanied by various disturbing symptoms, such as discomfort and apprehension, for nervous patients with colloid goiters who have learned the

symptoms of hyperthyroidism may suffer from fear of their developing. Other organic and neurotic disturbances may simulate exophthalmic goiter in these

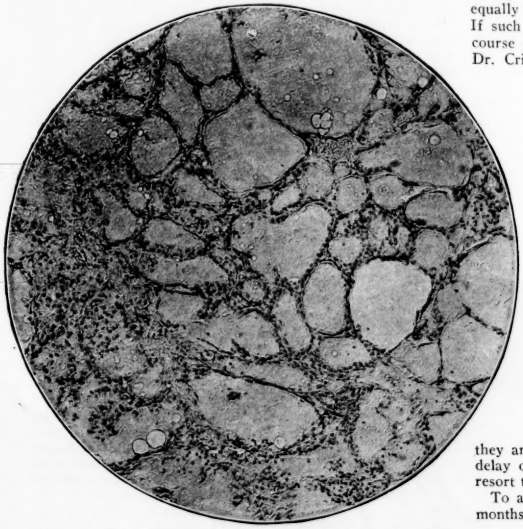

Fig. 4.—Section of goiter of twenty-two years' duration in a woman of 47. There were disturbing constitutional symptoms; the pulse was 116. There was a prompt return to normal health after partial thyroidectomy.

patients and complicate the diagnosis and the treatment. It is to be especially noted that there is a large group of patients in whom thyrotoxic symptoms develop in the course of chronic goiter, apparently dependent on the goiters themselves. These may produce a state of semi-invalidism and may even progress to pronounced invalidism. It is important that they should be recognized while yet within the proper therapeutic limit.

The results of operation on these patients are particularly encouraging. The great majority of them can thus be restored to good health.

The occasional development of abscesses is a complication which might be expected in these large degenerating glands. The seriousness of such a condition is largely due to the strong capsule which surrounds the gland and encloses the septic process.

One must also think of the possibility of cancer in connection with chronic goiter. This condition apparently is a rare coincidence. The few cases of undoubted cancer which I have seen have developed rather acutely.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CRILE, KENDALL AND DOWD

DR. A. J. OCHSNER, Chicago: In 1,200 cases in which I have removed the thyroid gland, I have personally examined the microscopic sections of every gland, and wherever hyperthyroidism was present invariably found portions of the thyroid gland which showed active epithelial cells. What Dr. Dowd has said regarding the indication for treatment is, of course, very clear and very correct. If you have a patient in whom this condition is permitted to go on you will ultimately have a serious injury to the nervous system and equally serious injuries to the muscular system and the heart. If such a condition can be relieved by a safe operation, of course the operation is distinctly indicated. The facts that Dr. Crile does not increase the hypersecretion due to the nervous element, that he does not traumatize unnecessarily, that he does not increase the injury to the patient in any way, are of great importance. It seems that the postoperative hypersecretion has something to do with the absorption of material secreted into the stomach during the operation. At any rate, we have found in cases of severe hyperthyroidism in which I have had to operate before the condition had subsided that the postoperative hyperthyroidism could be reduced enormously by making gastric lavage with water at 105 F. immediately after the operation was finished. I never operate in these cases of extreme hyperthyroidism at the top of the wave.

DR. MARTIN B. TINKER, Ithaca, N. Y.: Dr. Dowd has mentioned that these people are frequently treated by rest, Roentgen ray and boiling water, and attention should be called to the fact that a large number, not getting relief from these legitimate medical means, resort to quacks. During the past two years fully 50 per cent. of patients who have come under my care have been treated by osteopaths, chiropractors or other irregulars. Because the condition is not immediately dangerous to life, they are sometimes encouraged by their medical advisers to delay operation. The reasons why they should be urged to resort to surgery have been clearly brought out by Dr. Dowd.

To add emphasis, I would report my experience for three months this year during which time three patients coming

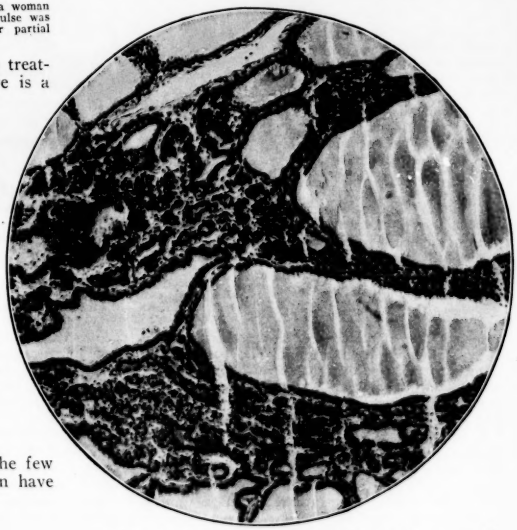

Fig. 5.—Section of goiter of fourteen years' duration from woman of 32. There were moderate constitutional symptoms. She made a satisfactory recovery after partial thyroidectomy.

from various sections of our state, with very toxic goiters, died in their beds without any surgical intervention whatever. Patients overestimate the danger of operation for the relief of goiter; they underestimate the dangers of the dis-

ease. Scarcely a week goes by that a patient does not come into my office for the reason that some member of the family has died from goiter.

My remarks are mostly to emphasize points well brought out by Dr. Dowd, who also called attention to the fact that these growths are transformed by hyperplasia into the worst forms of toxic goiter. He has spoken of the danger of abscess. Any man who has done much goiter surgery must have seen several such cases. He has emphasized the importance of the changes in the circulatory system, which in many patients go on to an incurable condition; they are possibly able to live, but they are not useful members of society as they should be; they are handicapped for life as the result of this disease.

Dr. Dowd has spoken of the frequency of pressure symptoms. Among these are not only distress in breathing, and loss of voice, but, in certain cases, inability to swallow. I had one patient who was unable to swallow solid food for seven years; another for three years. The importance of cancer of the thyroid should also be urged. In one year I saw four of these patients, and there was not one of the four but had carried the goiter from ten to twenty-five years; that is to say, they had had simple goiter, readily curable by operation, and if promptly handled the malignant change would not have occurred.

DR. SOLOMON SOLIS-COHEN, Philadelphia: Contrary to surgical opinion, I continue to believe that goiter in exophthalmic goiter, being only an incident and not the main factor, should not be treated surgically, except in a small proportion of cases—less than 10 per cent. But when the goiter is itself the disease, when the pathologic change in the thyroid gland constitutes the main lesion, then the only right way to deal with it is to get rid of it by excision or ligature, or some other destructive means, as soon as possible. Should toxic symptoms develop in these cases, then the indication becomes still more urgent to remove the goiter, because that is the source of evil.

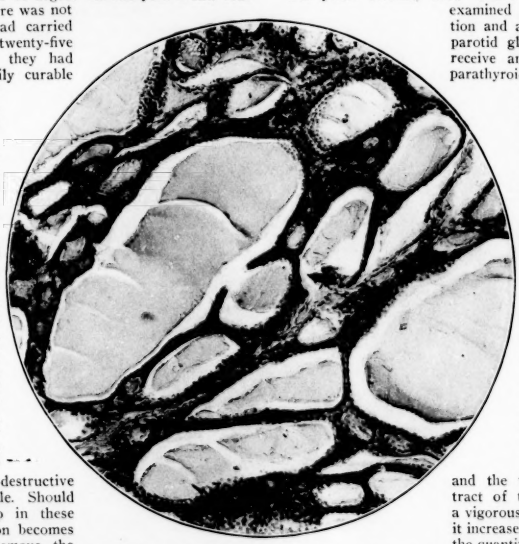

Fig. 6.—Section of large goiter of four years' duration in a woman of 47. There were pronounced constitutional symptoms, which still continue four months after partial thyroidectomy.

I was especially interested in the demonstration of the connection of the parathyroid—its inhibitory rôle, so to speak—in this trinity of endocrine disturbances giving rise to certain toxic phenomena. In practice I often observe the secondary disturbances which are here attributed to the suprarenal cortex and a preurea compound coming from the suprarenal cortex.

In the medicinal and hygienic treatment of a case of exophthalmic goiter, the patient recovering under these measures may retain or develop certain symptoms, the type of which may be aptly illustrated by the tremor which is considered one of the cardinal features in the diagnosis, and which may possibly, indeed probably, be attributed to compromising of the parathyroids and production of this highly important compound to which our attention has been called. In such instances, I have found empirically, that the administration of parathyroid substance—and I mean genuine parathyroid substance—is the best means of controlling such symptoms. The treatment was based, of course, on the familiar observations of tetany following removal of the parathyroids and similarly to the rôle of calcium in such cases, it is sometimes found that the association of calcium bromid or other calcium salt with the parathyroid is better than the parathyroid alone in controlling the tremulousness and excitement of these patients. In the course of a persistent treatment of exophthalmic goiter by medicinal means we sometimes find that a patient who is rapidly improving suddenly begins to show high excitement, perhaps fever, to lose weight, to have tachycardia return or increase, and apparently to do very badly. I have had reason to believe that in some such instances the result has been due to too rapid disintegration of the pathologic thyroid gland or at least too rapid flooding of the circulation with thyrotoxic products under some of the measures adopted. Perhaps it is this pre-urea compound which is at work. At all events, the simple withdrawal of medicaments, while keeping the patient at rest and continuing our general hygienic measures, has in so many cases been followed by subsidence of the untoward symptoms that the conclusion has been forced on us that we have here cause and effect and not simply coincidence.

DR. JOHN ROGERS, New York: A little while ago I examined a parathyroid preparation and about one half of it was parotid gland. So if you do not receive any results from feeding parathyroid you can draw the natural inference. Dr. Kendall of Rochester has described *the* active principle of the thyroid. I would like to suggest that it be called *an* active principle. So far as I know, the active principle of an organ should produce immediate and constant demonstrable changes in one or more other organs of the body. I have tested this product of Dr. Kendall's on several occasions and can say that in the stomach it produces an immediate demonstrable response; I think also on the blood pressure. The stomach is very interesting in that it is supplied by the sympathetic and the vagus. An aqueous extract of the thyroid will produce a vigorous response in the stomach; it increases peristalsis, and increases the quantity and acidity of secretion apparently by stimulation of the vagus. This product of Dr. Kendall's will produce about half the response in the stomach that the extract of the gland will when given in the same dosage. Some substances derived from the thyroid are inert, some have beneficial effect, and some are toxic.

One of the most noticeable effects in thyroid disturbances is the susceptibility of the patient to fatigue. I do not know of any published experiments which demonstrate the relation of the thyroid to fatigue so well as some I have recently watched and which have not yet been published. It is possible to isolate the rectus abdominis muscle in the cat and then stimulate it and cause it to unite its contractions on a drum. It will fatigue in about four hours, so that the writing on the smoked drum will show a fall in the power of the muscle. If the thyroid gland is excised at the beginning of the experiment the fatigue can usually be induced in twenty minutes to one-half hour. After it has been fatigued, the injection of thyroid extract will immediately cause the effects of the fatigue to disappear. That is the most marked demonstration of the energy production of the thyroid that has been shown.

DR. E. C. KENDALL, Rochester, Minn.: Dr. Rogers remarks concerning what should be called *an* active constituent and not *the* active constituent will probably not be answered for a number of years. I base my statement that it is the active constituent of the thyroid on the fact that it is the compound that contains iodin, and many workers have already shown that the activity of the gland is in proportion to the iodin content. I should like to point out the fact that the injection of the active constituent of the thyroid in pure crystalline form produces absolutely no apparent effect, immediately. I have never seen in any animal an immediate response; however, if several daily successive injections are given we can produce a most intense reaction. It is this long latent period which is misleading in thyroid investigations. Any result which is obtained immediately on the injection of preparations from the thyroid is not due to the action of the iodin-containing compound. The latent period after administration of the iodin compound has been one of the most puzzling things to clear up in the investigation I have been carrying on, and I think it has been adequately cleared up by showing that it is necessary to bring into response other endocrine glands, one of which is the suprarenal cortex. If the suprarenal cortex is not activated, a totally different chain of results is obtained than when it is activated.

DR. CHARLES N. DOWD, New York: We do not live in a goiter district. In this particular locality I think we do not see the same proportion of exophthalmic goiter among our goiter patients as is seen in some other localities. We are continually struggling with the problem of patients with enlarged thyroid glands and moderate constitutional symptoms. They are semi-invalids, unable to put normal effort into anything which they undertake. This study has been made in the effort to help these people. Those who have discussed the paper have aided materially in this effort.

THE DIAGNOSIS OF TUBERCULOUS LARYNGITIS *

JULIUS DWORETZKY, M.D.
OTISVILLE, N. Y.

The importance of the early diagnosis of pulmonary tuberculosis has been fully established. The early detection of the pulmonary lesion has in the majority of instances enabled us either to cure the lesion or at least check its progress.

The early diagnosis of laryngeal tuberculosis, however, is still being neglected, and too often we meet the advanced laryngeal cases, in which conservative treatment is of no avail, while radical treatment is also useless because of the existing extensive destruction of tissue. Such involvement of the larynx could often be avoided if treatment were instituted in the early infiltrative stage. Thus it could safely be said that, as in pulmonary tuberculosis, the prognosis and the successful treatment of tuberculous laryngitis depends largely on early diagnosis.

In this paper, however, the discussion will not be limited to the diagnosis of the early lesion, but will include all stages and phases of laryngeal tuberculosis.

Since the diagnosis of laryngeal tuberculosis is made by the actual viewing of the larynx, it can readily be seen that the recognition of a lesion in the larynx is much easier than the detection of the pulmonary lesion. This would especially apply to the early cases. The diagnosis will also be helped materially if it is borne in mind that tuberculosis of the larynx is invariably secondary to pulmonary tuberculosis.

Through the cooperation and constant watchfulness on the part of the clinic or family physician, laryngologist and the sanatorium physician, tuberculosis of the larynx can be diagnosed early.

The clinic or family physician with a little practice can diagnose early cases of laryngeal tuberculosis if a routine laryngoscopic examination is made on every patient with pulmonary tuberculosis, even when laryngeal symptoms are entirely lacking. Thirty-five per cent. of the cases of tuberculous laryngitis studied had either no symptoms referable to the larynx or else they were very slight and could easily be attributed to other causes. It is therefore evident that unless a careful examination of the larynx is performed on every patient with pulmonary tuberculosis, a number of cases will escape attention.

The laryngologist may often be misled in the diagnosis of the early lesion because of the absence of a history of tuberculosis, and the excellent general condition of the patient. Such errors can be avoided by having a patient presenting a doubtful lesion in the larynx undergo a thorough chest examination, and by repeatedly examining the sputum. Only after persistently negative examinations may tuberculosis of the larynx be excluded.

The sanatorium physician is in a position to diagnose laryngeal tuberculosis in all stages and phases.

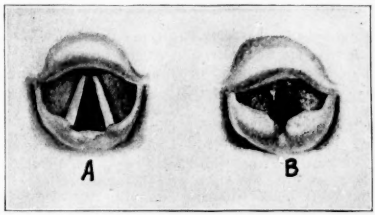

Fig. 1 (Case 1).—*A*, Acute tuberculosis of the larynx; *B*, condition of the larynx six weeks later.

He has the advantage of having the patient under his constant supervision, and of possessing accurate knowledge of the patient's pulmonary condition. Therefore, if every patient is examined on admission and subsequently at regular intervals, no case of tuberculosis of the larynx should ever escape the observation of the sanatorium physician.

As in most other diseases, these patients present subjective and objective symptoms. The subjective symptoms are those caused by the lesion in the larynx as well as those associated with the pulmonary lesion. The objective symptoms are those of pulmonary tuberculosis and the physical findings on laryngoscopic examination. In this paper laryngeal symptoms and signs only will be considered.

The present study included 150 cases of laryngeal tuberculosis, of which eighty-six were classified as early, and sixty-four as moderately advanced and advanced.

SYMPTOMS

The symptoms of tuberculosis of the larynx can be conveniently divided into two groups: first, those of the early stage, and second, those of the moderately advanced and advanced stages.

The most common symptom among the eighty-six cases of early disease was hoarseness, occurring in

* From the Municipal Sanatorium, Bureau of Hospitals, Department of Health, City of New York.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

seventy-one, or 82.6 per cent. It often began with slight huskiness of the voice in the morning, gradually disappearing during the course of the day. It varied from a slight change in the voice quality to a low pitched rasping sound. The onset of the hoarseness was, as a rule, insidious in the chronic cases, while it was more sudden in the acute and subacute cases. When the onset was insidious, the patient was often unaware of the development of this symptom, and only by careful questioning could the date of the onset

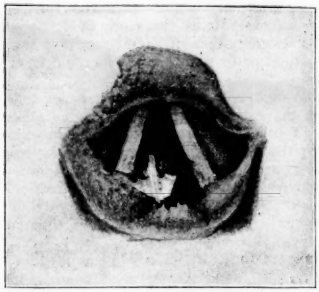

Fig. 2 (Case 2).—Acute tuberculosis of the larynx.

be established. In early cases the hoarseness is most commonly due to infiltration of the posterior commissure or of one or both cords, and often to a combination of both. Cases with marked papillomatous growths in the upper portion of the posterior commissure with no alteration in the quality of the voice were often seen. Thus the hoarseness depends largely on the location of the tumefaction. If it is above or below the cords, the voice may be quite normal.

The next most frequent symptom, or rather combination of symptoms, was the sense of discomfort in

TABLE 1.—SYMPTOMATOLOGY NOTED IN 150 CASES OF TUBERCULOSIS OF THE LARYNX *

Symptoms	Early Cases or Stage 1 Number	Early Cases or Stage 1 Per Cent.	Advanced Cases or Stages 2 and 3 Number	Advanced Cases or Stages 2 and 3 Per Cent.
Hoarseness:				
Slight	32	37.2	4	6.3
Moderate	23	26.8	17	26.5
Marked	16	18.6	40	62.5
No hoarseness	15	17.4	3	4.7
Total	86	100.0	64	100.0
Dysphagia	2	2.3	11	17.2
Dysphonia	1	1.2	11	17.2
Aphonia	3	3.5	12	18.8

* Sense of discomfort was present in 51, or 59.3 per cent., of the early cases and in 55, or 86 per cent., of the advanced cases. This was absent in 35, or 40.7 per cent., of the early cases and in 9, or 14 per cent., of the advanced cases.

the larynx. It was present in fifty-one, or 59.3 per cent., of the cases. This sensation was vaguely and variously described as a lump in the throat, desire to clear the throat before talking, consciousness of the throat irritation as if caused by a hair lodging in the throat, dryness, hypersecretion, burning, rawness, sticking pain, etc.

Dysphagia, dysphonia and aphonia are uncommon among early cases of tuberculous laryngitis. Dysphagia was found to exist in only 2.3 per cent. of the early cases; dysphonia in 1.2 per cent., and aphonia in 3.5 per cent.

Of the sixty-four cases with pronounced lesions, fifty-two were of Stage 2 and twelve were of Stage 3. The symptomatology in this class is more definite and often pathognomonic. Hoarseness was present in sixty-one of the cases, or 95.3 per cent. Sense of discomfort was present in fifty-five, or 86 per cent. Dysphagia and dysphonia in eleven, or 17.2 per cent., and aphonia in twelve, or 18.8 per cent., of the cases.

From the foregoing, it appears that hoarseness is almost always present when the involvement is extensive, and the classic symptoms, such as dysphagia, aphonia and dysphonia, although more common than in the early cases, are far less common than generally supposed.

The physical findings in tuberculous laryngitis will depend, first, on the stage of the disease, whether early or advanced; second, on the type of the lesion, whether acute, subacute or chronic. The early or incipient cases are characterized by infiltrative changes; the advanced cases by extensive infiltration with ulceration. The acute cases are characterized by the presence of macroscopic tubercles, soft edema with rapid destruction of tissue; the subacute cases, by pseudo-edema due to proliferative changes and the formation of granulations; the chronic cases, by hyperplastic changes, marked fibrosis and slow course.

PATHOLOGIC MANIFESTATIONS

Anemia of the Larynx.—This is often spoken of as a sign of tuberculosis. This sign is present in acute cases in which we have formation of tubercles, marked edema and interference with circulation. The acute type of laryngeal tuberculosis, however, is not the most common type. Only thirteen out of 150 patients examined had an acute involvement of the larynx, and therefore anemia is rather an uncommon feature of tuberculosis of the larynx in general. When anemia is present in other than acute cases, it is usually due to a general anemic condition of the patient.

Fig. 3 (Case 3).—Acute tuberculosis of the larynx.

Congestion.—This condition is more common than anemia. It is present in the great majority of the subacute and chronic cases. The congestion may be due to a catarrhal condition preceding the tuberculous lesion, or may be caused by the tuberculous lesion itself.

Infiltration.—By this term is implied inflammatory changes caused primarily by the tubercle bacillus. The part affected is congested and increased in size. The edema may be either of the soft variety, such as seen in the acute case, or of the hard indurative kind,

as seen in the subacute and chronic cases. Soft edema occurring in the arytenoids usually produces the characteristic pear-shaped swelling. When the process is chronic, there is a marked proliferation of connective tissue, and the infiltration becomes hard. Infiltration is most common in the posterior segment of the larynx, but may be seen elsewhere.

Ulceration or Necrosis.—Degeneration of tissue usually occurs after tubercles coalesce and caseate. A typical recent ulcer has a grayish appearance, while a chronic ulcer may be red, due to the formation of granulations. Ulcers are most commonly seen at the posterior portion of the vocal cords, the vocal process, the posterior commissure, and the rim of the epiglottis.

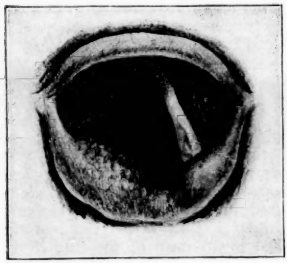

Fig. 4 (Case 4).—Acute tuberculosis of the larynx.

Tumefaction.—This may appear before or after ulceration takes place. Tumefaction before ulceration is usually due to edema, and is most common in the arytenoids, the ventricular bands, the laryngeal surface of the epiglottis and the aryepiglottidean folds.

TABLE 2.—PHYSICAL SIGNS OBSERVED IN 150 CASES OF TUBERCULOSIS OF THE LARYNX *

	Early Cases or Stage 1		Advanced Cases or Stages 2 and 3	
	Number	Per Cent.	Number	Per Cent.
Interarytenoid Space:				
Affected	78	90.7	63	98.4
Not affected	8	9.3	1	1.6
Total	86	100.0	64	100.0
Vocal Processes:				
Affected	41	47.7	57	89.0
Not affected	45	52.3	7	11.0
Total	86	100.0	64	100.0
Arytenoid cartilages:				
Affected	45	52.3	36	56.3
Not affected	41	47.7	28	43.7
Total	86	100.0	64	100.0
Vocal cords:				
Affected	17	19.8	46	71.9
Not affected	69	80.2	18	28.1
Total	86	100.0	64	100.0
Epiglottis:				
Affected	13	15.1	23	36.0
Not affected	73	84.9	41	64.0
Total	86	100.0	64	100.0
Ventricular bands:				
Affected	16	18.6	20	31.3
Not affected	70	81.4	44	68.7
Total	86	100.0	64	100.0
Aryepiglottidean folds:				
Affected	6	7.0	18	28.1
Not affected	80	93.0	46	71.9
Total	86	100.0	64	100.0

* The cases were grouped into three clinical types: There were 13, or 8.7 per cent., of acute cases, 66, or 44 per cent., subacute, and 71, or 47.3 per cent., chronic cases.

When it follows ulceration, it usually takes the form of granulations, papillomas or tuberculoma. Granulations are most common when ulcerations are present. Papillomas and tuberculoma usually occur at the posterior commissure.

PHYSICAL SIGNS

The frequency with which a part of the larynx was found to be affected was in direct proportion to the amount of trauma that part received as a result of its functional activity and its location.

Interarytenoid Space.—The earliest and most frequent seat of disease was the posterior commissure. This was found to be involved in 141 out of 150 cases examined. Of the eighty-six cases of early disease seventy-eight, or 90.7 per cent., showed involvement of the posterior commissure, while in the sixty-four cases of advanced lesions it was involved in sixty-three, or 98.4 per cent.

The earliest change in the posterior commissure consists of hyperplasia of the mucous membrane. On partial approximation of the cords, this hyperplastic mucous membrane takes on a wrinkled appearance. A streak of mucopus is often seen adhering to the space; but this merely signifies that there is a discharging focus in the lungs. It is often present without any demonstrable tuberculous lesion in the larynx. The usual color of the hyperplastic mucous membrane is gray, although occasionally it is red. As the lesion progresses, a median furrow is formed which is readily perceived on a partial approximation of the cords following a deep inspiration. At this stage a lateral furrow, as described by Casselberry,[1] is also frequently observed. The formation of these furrows is due to the constant creasing of the diseased mucous membrane during all expiratory acts. A little later, if the disease is not arrested, the process will go on to ulceration. Of 141 cases affected, thirty showed ulceration of the posterior commissure. The ulcers were usually shallow and of gray appearance. Often there is an exuberance of granulations with the formation of papillomas or tuberculoma. The papillomas vary in size and shape, but are usually of the broad base type. The amount of discomfort caused by a papilloma in the space depends on its location. If situated right between the true cords, the symptoms, such as hoarseness, aphonia and dysphonia, are marked while if situated above or below the cords, symptoms may be lacking. Patients with papillomatous growths in the space almost always clear the throat before talking. This is usually due to the presence of the growth or to the streaks of mucopus adhering to its rough surface. Conditions such as nasal stenosis, chronic pharyngitis, accessory sinusitis, bronchiectasis, lung abscess, syphilis and asthma will cause a hyperplasia of the posterior commissure simulating tuberculosis. When these conditions, however, are eliminated, interarytenoid hyperplasia with or

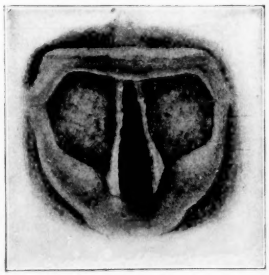

Fig. 5 (Case 5).—Subacute laryngeal tuberculosis.

1. Casselberry, W. E.: The Recognition of Early Changes in the Larynx in Tuberculosis, THE JOURNAL A. M. A., Nov. 15, 1913, p. 1789.

without ulceration is pathognomonic of tuberculosis of the larynx.

Vocal Processes.—The portion of the larynx next most frequently affected is the vocal process, or the anterior angle of the arytenoid cartilage, which gives attachment to the vocal cords. The vocal process was found frequently affected in early cases, and is therefore considered separately. Of eighty-six cases in which early involvement occurred, the vocal process was affected in forty-one, or 47.7 per cent., while of sixty-four cases of advanced disease it was affected in fifty-seven, or 89 per cent. The proximity of the vocal processes to the arytenoids, true cords and interarytenoid space, with the consequent liability to trauma, renders them a favorable site for the development of the lesion.

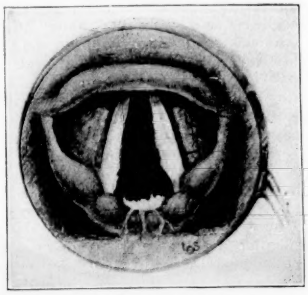

Fig. 6 (Case 6).—Subacute tuberculosis of the larynx.

Arytenoid Cartilages.—The arytenoids are next in frequency of involvement. Infiltration of the arytenoids varied from slight swelling, which appeared hard, or semiedematous, to large edematous masses, partially obstructing the opening into the larynx.

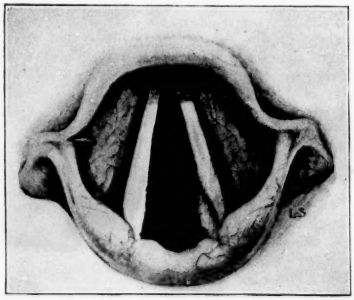

Fig. 7 (Case 7).—Subacute tuberculosis of the larynx.

Marked edema of the arytenoids with extension into the folds gives the characteristic pear-shaped appearance. Out of eighty-six cases of early disease, they were found affected in forty-five, or 52.3 per cent., while they were involved in thirty-six, or 56.3 per cent., of the sixty-four advanced cases. Thus it is seen that eighty-one of the series, or 54 per cent., showed infiltration of one or both arytenoid cartilages.

Vocal Cords.—Out of eighty-six cases of early involvement, the vocal cords were affected in seventeen, or 19.8 per cent., while of the sixty-four cases of advanced involvement, affection of the cords was noted in forty-six, or 71.9 per cent. The usual site of the lesion was at the posterior portion of the cords. The anterior portion was often involved together with the posterior portion, but very rarely was the lesion limited to the anterior portion. Lesions of the cords do not differ in their appearance from a lesion located at any other part of the larynx. Descriptive terms, such as "mouse-eaten," "granular" and "cleft-like," are often used in speaking of these lesions. Thus sixty-three out of 150, or 42 per cent., of the cases studied showed involvement of the true cords.

TABLE 3.—THE ORDER OF FREQUENCY OF INVOLVEMENT OF THE DIFFERENT PARTS OF THE LARYNX

	Tuberculous		Nontuberculous	
	Number	Per Cent.	Number	Per Cent.
Interarytenoid space	141	94.0	9	6.0
Vocal processes	98	65.3	52	34.7
Arytenoid cartilages	81	54.0	69	46.0
Vocal cords	63	42.0	87	58.0
Epiglottis	36	24.0	114	76.0
Ventricular bands	36	24.0	114	76.0
Aryepiglottidean folds	24	16.0	126	84.0

Epiglottis.—The epiglottis was found affected in thirty-six out of 150 cases studied. Of the eighty-six cases of early involvement, the epiglottis was affected in thirteen, or 15.1 per cent., while in sixty-four cases of advanced disease it was affected in twenty-three, or 36 per cent. The epiglottis is the first portion of the larynx that comes into view on laryngoscopic examination, and its lesions are therefore most easily detected. Infiltration is the most common lesion of the epiglottis. The site of the lesion was either at the rim or else at the cushion. All the lesions were bilateral and more or less diffuse. Only one case presented a lesion limited to the right side and the dorsal surface of the epiglottis.

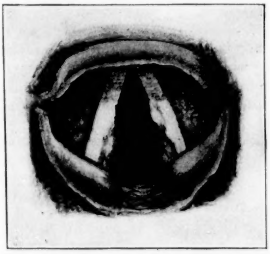

Fig. 8 (Case 8).—Subacute tuberculosis of the larynx.

Ventricular Bands.—The ventricular bands were diseased in thirty-six cases out of 150 examined. Of the eighty-six cases of early involvement, sixteen, or 18.6 per cent., were found affected, while of the sixty-four more advanced cases twenty, or 31.3 per cent., revealed lesions of these bands. The most common lesion of the false cords was infiltration. Only six cases out of the thirty-six showed erosions.

Aryepiglottidean Folds.—Of the 150 cases studied, twenty-four showed involvement of the folds. Of the eighty-six cases of early disease, the folds were affected in six cases, or 7 per cent., while of the sixty-four cases of advanced involvement, they were affected in eighteen, or 28.1 per cent. The usual manifestation of the disease was infiltration. Only two cases out of the twenty-four showed infiltration with erosion.

DIFFERENTIAL DIAGNOSIS

In discussing the differential diagnosis, only those conditions that are not described at length in textbooks will be considered here.

Bronchiectasis and Lung Abscess.—A large majority of patients with bronchiectasis or lung abscess presented an appearance in the larynx typical of tuberculosis. The pulmonary condition of these patients being unknown at the time of the examination, the laryngeal lesion was classified as tuberculous. The diagnosis was changed only when it became established that they were suffering from a nontuberculous pulmonary infection, and the larynx would unlikely be tuberculous.

Accessory Sinusitis.—These cases often present an appearance in the larynx that may lead one to believe it tuberculous. In these patients there is usually a marked thickening at the posterior commissure and often at the posterior ends of both true cords. The thickening is undoubtedly due to the purulent discharge from the posterior nares, and to the improperly modified air breathed in through atrophic nasal chambers, a condition which usually accompanies chronic accessory sinusitis. In such cases, a thorough

Fig. 9 (Case 9).—Chronic tuberculosis of the larynx.

examination of the nasal chambers and sinuses will help in establishing the diagnosis of the laryngeal lesion.

Laryngitis Sicca.—This condition often accompanies accessory sinusitis, atrophic rhinitis and nasal obstruction. The lesion in these cases is diffuse, and here, also, the diagnosis may be determined after a thorough examination of the upper portion of the respiratory tract.

TABLE 4.—THE ORDER OF FREQUENCY OF ULCERATION OF THE DIFFERENT PARTS OF THE LARYNX

	Number of Involvements	Number of Ulcerations	Per Cent.
Arytenoids	81	6	7.4
Aryepiglottidean folds	24	2	8.3
Ventricular bands	36	6	16.7
Epiglottis (rim)	36	7	19.4
Interarytenoid space	141	30	21.3
Vocal processes	98	39	39.8
Vocal cords	63	31	49.2

If, however, in addition to one or more of the three previously described conditions the patient also has a positive sputum, he should be carefully watched, for the resistance of the larynx having been lowered, it is readily subject to infection by the tubercle bacillus, and any signs of progress of the lesion should be regarded as evidence of clinical tuberculosis.

Lupus.—When occurring in the larynx, this disease is characterized by a warty growth, very little ulceration and marked fibrosis. While tuberculosis of the larynx is usually secondary to tuberculosis of the lungs, lupus of the larynx is supposedly secondary to lupus of the skin. In the author's case, however, the lupoid lesion in the larynx was apparently primary.

We must also differentiate tuberculous laryngitis from hypertrophic laryngitis, syphilis and carcinoma, conditions familiar to all.

Fig. 10 (Case 10).—Chronic tuberculosis of the larynx.

REPORT OF CASES

CASE 1.—I. T., aged 20, had a moderately advanced type of pulmonary tuberculosis. The larynx showed uniform infiltration of the epiglottis with no ulceration and interarytenoid hyperplasia (Fig. 1 *A*). Discomfort in the throat was the only subjective symptom present.

The condition in the same patient six weeks later is shown in Figure 1 *B*. There is acute edema with ulceration of epiglottis, both arytenoids, aryepiglottidean folds and ventricular bands; infiltration and erosion of both cords; negative Wassermann test. There were marked dysphagia and dysphonia and regurgitation of food, especially liquids, through the nose, which latter symptom is caused by the tuberculous involvement of the oropharynx and soft palate, which the patient developed soon after admission. The diagnosis was acute tuberculosis of the larynx with very grave prognosis.

CASE 2.—E. McH., aged 19, was in the moderately advanced pulmonary stage. There was infiltration of the entire epiglottis with erosion of the right half; infiltration and erosion of the right aryepiglottidean fold and arytenoid, and hyperplasia of the posterior commissure. Occasional dysphagia, occurred, but no hoarseness. The diagnosis was acute tuberculosis of the larynx.

CASE 3.—J. N., aged 43, in whom pulmonary tuberculosis was moderately advanced, had a marked infiltration of the epiglottis (turban-shaped), pear-shaped arytenoids, and infiltration and erosions of both false and true cords. The Wassermann test was negative. Occasional dysphagia, marked hoarseness and dysphonia occurred. The diagnosis was acute tuberculosis of the larynx.

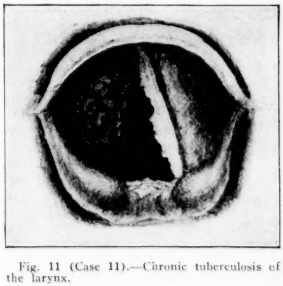

Fig. 11 (Case 11).—Chronic tuberculosis of the larynx.

CASE 4.—P. V., aged 38, had moderately advanced pulmonary tuberculosis. On examination, edema and ulceration of the right ventricular band and the right arytenoid were found, also slight edema of the left arytenoid with infiltration of the vocal process. The Wassermann test was negative. Discomfort in the larynx was the principal subjective symptom. The diagnosis was acute tuberculosis of the larynx.

CASE 5.—P. S., aged 22, was in an advanced stage of phthisis, and examination of the larynx revealed infiltration with superficial ulceration of both ventricular bands, erosions of both cords and swelling of both arytenoids. One year ago the patient had an acute involvement of the entire larynx with pronounced dysphagia. Amputation of the upper two-thirds of the epiglottis was followed by marked local and general improvement. The diagnosis was subacute tuberculosis of the larynx following the acute type.

Fig. 12 (Case 12).—Chronic tuberculosis of the larynx.

CASE 6.—P. F., aged 21, complained of hoarseness. A broad-base papillomatous growth was found in the posterior commissure of the larynx. It represented the characteristic rugged appearance with adhering streaks of mucopus, and there was infiltration and slight ulceration of the free edges of both true vocal cords. This patient was in an advanced stage of pulmonary tuberculosis. The diagnosis was subacute tuberculosis of the larynx.

CASE 7.—A. P., aged 30, in whom pulmonary tuberculosis was moderately advanced, showed a slight thickening at the posterior commissure of the larynx, with infiltration and ulceration of posterior portion of both true cords especially the left. There was also slight hoarseness. The diagnosis was subacute tuberculosis of the larynx.

CASE 8.—O. B., aged 26, complained of hoarseness and occasional discomfort in his throat. Examination revealed infiltration of the posterior commissure with mammilated appearance of the mucous membrane, and infiltration and erosion of the posterior two thirds of both true cords. The patient had a moderately advanced type of pulmonary tuberculosis. The diagnosis was subacute tuberculosis of the larynx.

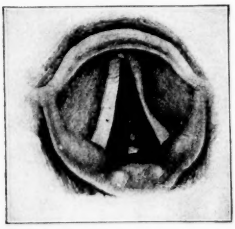

Fig. 13 (Case 13).—Chronic tuberculosis of the larynx.

CASE 9.—T. C., aged 30, had marked hoarseness and laryngeal irritation. Examination of the chest showed a moderately advanced form of pulmonary tuberculosis. Both true vocal cords and the posterior commissure were infiltrated and ulcerated. There was also slight edema of both arytenoids. The diagnosis was chronic tuberculosis of the larynx.

CASE 10.—O. H., aged 24, was not troubled with any irritation of the throat, but examination of the larynx showed infiltration of the posterior commissure with slight thickening of the arytenoids. These signs are generally the earliest manifestation of laryngeal tuberculosis. Diagnosis was chronic tuberculosis of the larynx.

CASE 11.—F. G., aged 28, had an advanced type of pulmonary tuberculosis. The entire right vocal cord was eroded, with infiltration and erosion of the right ventricular band. Also partial erosion ("mouse-eaten" appearance) of the left cord and hyperplasia at the posterior commissure with chronic infiltration of both arytenoids. There was marked hoarseness and partial aphonia. The diagnosis was chronic tuberculosis of the larynx.

CASE 12.—M. K., aged 30, complained of slight hoarseness and, on examination of the throat, papillomatous infiltration of the posterior half of the right cord with slight thickening at the interarytenoid space was found. Pulmonary tuberculosis in this patient was far advanced. The diagnosis was chronic tuberculosis of the larynx.

CASE 13.—A. W., aged 24, was in an early stage of pulmonary tuberculosis. Infiltration of left ventricular band was to be seen, also a chronic hyperplasia of the posterior commissure but no subjective symptoms of throat irritation had been noticed. The diagnosis was chronic tuberculosis of the larynx.

CASE 14.—E. C., aged 24, had a warty growth on all parts of the larynx. Physical examination of the lungs was practically negative; sputum examination and the Wassermann test were negative. Hoarseness, dysphonia and discomfort in the larynx were the troublesome subjective symptoms. The diagnosis was lupus of the larynx.

CONCLUSIONS

1. The early diagnosis of laryngeal tuberculosis is of considerable importance.

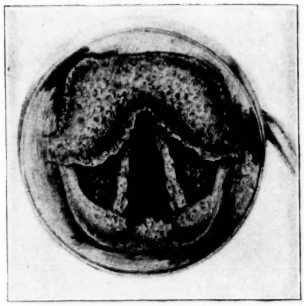

Fig. 14 (Case 14).—Lupus of the larynx.

2. Since tuberculosis of the larynx is almost always secondary to pulmonary tuberculosis, the determination of pulmonary tuberculosis is of value in the diagnosis of laryngeal tuberculosis.

3. Dysphagia, dysphonia and aphonia are rare in early cases, and much less common in late cases than generally supposed.

4. The frequency with which a part of the larynx was found to be affected was in direct proportion to the amount of trauma that part received as a result of its location and functional activity. The parts were affected in the following order of frequency: interarytenoid space, vocal processes, arytenoids, vocal cords, epiglottis, ventricular bands and aryepiglottidean folds.

5. Many cases of bronchiectasis, lung abscess and accessory sinusitis present a laryngeal picture similar to tuberculosis, and to avoid confusion a thorough study of each case is essential.

6. Through the cooperation of the family or clinic physician, the laryngologist and the sanatorium physician, no case of laryngeal tuberculosis should ever escape our attention.

ABSTRACT OF DISCUSSION

DR. WOLFF FREUDENTHAL, New York: Dr. Dworetzky has brought out several points which are not quite in accord with my experience. When, for instance, he says that tuberculosis of the larynx is similar to pulmonary tuberculosis, I cannot quite agree with him. If we have plain laryngitis which does not respond to treatment, we ought to examine the lungs in every case. That anemia of the larynx is rare is contrary to my experience. I have observed a marked anemia beginning at the border of the uvula and going down, which occurs frequently. The congestion which is seen in many instances is often due either to a cough or the previous occupation of the patient, as, for instance, in cigarmakers.

DR. EMIL MAYER, New York: The last picture shown by the speaker is to my mind one of the most interesting things I have seen, in that it shows the condition of what we might call chronic tuberculosis or lupus. If you have never seen a case of lupus, bear that picture in mind; it will save you a great deal of trouble, because if you saw an epiglottis, or even the anterior part of the larynx, in that condition, you would immediately say that is tuberculosis and get into trouble, for the reason that your patient would have very few, if any, of the symptoms. The most important differentiation between a chronic tuberculosis, that is, a lupus of the larynx, and tuberculosis is in the question of prognosis. I know a business man who is doing fine work, whose voice is not affected, and yet he has a ragged epiglottis; he has no cough, but he knows that he has tuberculosis of the larynx. It really is a lupus, and that is the most important differentiating sign, namely, ulceration and destruction without any corresponding symptoms.

A NEW OPERATION FOR MOVABLE KIDNEY*

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ST. LOUIS

Garre[1] tells us that movable or floating kidney is mentioned in the literature of early Arabian medicine. Landau[2] states that the anatomists of an early date knew of the congenital form of this malady but that the acquired variety was first mentioned in 1581 by François Pedemontanus. The first surgical effort in the treatment of the condition was a nephrectomy performed by Martini in 1878. It was not until 1881 that the rational method of restoring the organ to its normal location and fastening it in position was proposed by Hahn.[3]

Since his time there have been the greatest variety of operative procedures advocated, all of them intended in one way or another to suspend the kidney by sutures either through its substance, through the tunica propria or through the fatty capsule. Some have thrown loops around it of fascia, catgut, nonabsorable sutures, or gauze, designed to hold it in place for the formation of adhesions, while others have utilized the fibrous capsule by carrying it over a rib or over some other component structure of the abdominal wall. Gauze packs and envelops have been used in a great variety of ways, both to hold it up temporarily and to induce the formation of adhesions.

Zondek[4] reminds us that the diagnosis of abnormal kidney position and mobility is by no means easy, since various students of anatomy who have made special contributions to this subject fail to agree on the amount of kidney structure that is normally uncovered by the ribs as well as on the normal range of motion imparted to it by respiration or by change of position.

It is obvious, then, that no surgical operation is justified by the mere considerations that a kidney is abnormally palpable or movable. The intrinsic symptoms produced by this condition are frequently so elusive and so difficult in some instances to identify when they appear in a highly nervous person that I am not convinced that it is very good surgery to operate, as Mills[5] says, "for subjective symptoms alone."

It must be admitted that a highly movable kidney is often accompanied by a renal type of pain which is

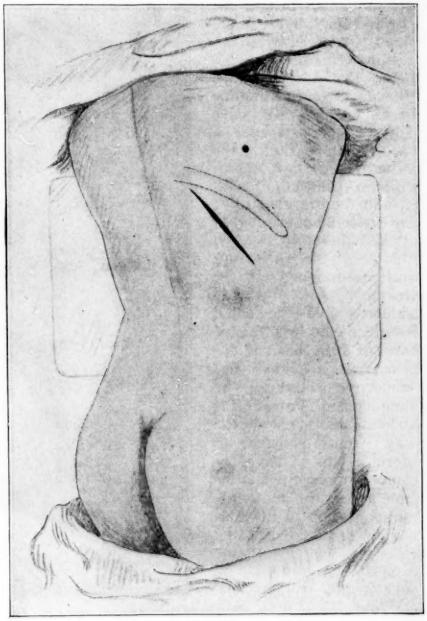

Fig. 1.—The incision.

instantly relieved by lying down. Then, too, there is Dietl's crisis, which some observers seem to think characteristic of this condition; however, one must be sure of the absence of kidneystone, stricture of the ureter, gallstone disease, etc., before making those symptoms his sole guide to an operation for movable kidney.

It would seem in the light of present knowledge that the one definite and invariable indication for operation must be of an anatomic nature, namely, intermittent hydronephrosis. This is expressed by a roentgenographic demonstration of a dilated kidney pelvis, atrophy of the apexes, and a kink in the ureter.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Garre and Ehrhardt: Nierenchirurgie, Berlin, 1907, S. Karger.
2. Landau: Movable Kidney in Women, Selected Monographs, London, New Sydenham Society, 1884.
3. Hahn: Zentralbl. f. Chir., 1881.
4. Zondek: Die Topographie der Niere und ihre Bedeutung für die Nieren Chirurgie, Berlin, August Hirschwald, 1903.
5. Mills, C. P.: Discussion on Nephropexy and Its Results, Tr. Roy. Soc. Med., 1913-1914, **7**, Part 3.

All of the other movable kidney patients excepting those of the class last mentioned are subjects for medical treatment.

Israel[6] writes that the fatty capsule may accurately fit the kidney and move with it between the layers of the fascia retrorenalis, or, as I have much more frequently noted in operating, the fatty capsule constitutes a more or less thick-walled sack a great deal larger than the kidney, within the limits of which the organ is free to make its excursions up and down.

After this right fatty capsule is stripped out, if the patient lies on the left side and in the Trendelenburg position, the observer will discover that there is left a well defined extraperitoneal cavity extending clear into the true pelvis.

Morris[7] is authority for the statement that the kidney does not always move up and down behind the peritoneum, but sometimes is covered by so exceedingly loose a peritoneum that it is enabled thus to cross the midline in its excursions. Since I have not had such a case, I do not know the value of this new operation in connection with it, and therefore none of my assertions are to be applied thereto.

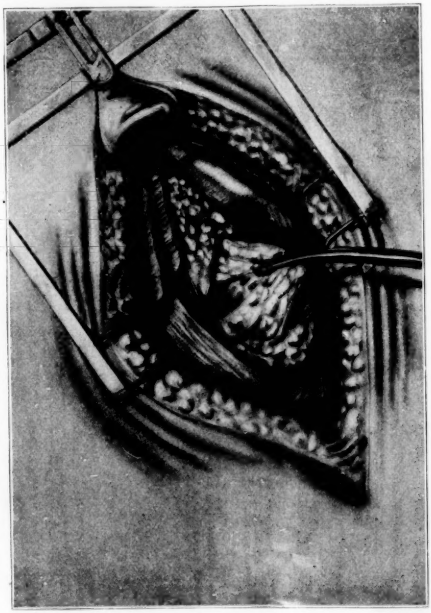

Fig. 2.—The intra-abdominal fat grasped preliminary to stripping it from the lumbar muscles.

Most of the earlier operations designed for the treatment of movable kidney have depended for their efficacy on some form of suspension as opposed to my distinctly supportive procedure. The hanging up of intra-abdominal organs all the way from stomach to uterus seems to have become a discredited principle in surgery, and while its application to the kidney does not involve the risks incident to organs completely covered by peritoneum, still its underlying mechanical deficiencies would seem to remain the same, especially when compared with a method that aims to prevent prolapse by obviating conditions which make a prolapse possible. In addition, Walkow and Delitzin[8] make the pertinent observation that any method which sutures the kidney to the abdominal wall causes pathologic adhesions similar to those which result from inflammation; hence they term sutures "artificial, untrustworthy, and not free from danger." It may then be admissible to use this statement as an additional argument for the performance of my operation, which is physiologic so far as it imitates nature's effort to hold the kidney in place by the deposition of fat in and around it.

Glenard,[9] and later Walkow and Delitzin,[8] mentioned sixteen different factors which influence the normal position and mobility of the kidney. As a matter of course, we cannot consider all of them in view of the fact that this paper is devoted to the exposition of one new method of treating the subject. It is sufficient to state that the operative technic now proposed rests in principle on a common clinical observation which has to do with but one of the normal factors mentioned above, namely, that the kidneys tend to become more than usually movable as an individual's body fat disappears, whereas this mobility decreases as weight is regained. The success of this method depends on the now well known principle that fat can be successfully transposed and even that free transplants of this tissue will remain viable.

The operative technic which I have used in the twenty cases under discussion is divided into the following six steps:

1. With the patient lying on the left side I have employed the incision of my old teacher, von Bergmann, which bisects the angle formed by the last rib and the outer edge of the erector spinae (Fig. 1).

2. As soon as the abdominal cavity is opened, all the fat is removed from the inside of the posterior abdominal wall, leaving the muscles perfectly bare in the kidney fossa, the object being the ultimate formation of broad adhesions between the kidney surface and these denuded muscles (Fig. 2).

3. The fatty capsule of the kidney is divided longitudinally the entire length of the organ and caught with clamps at several points (Fig. 3). The exposed kidney is lifted out of the abdomen, and at the same time the fatty capsule is inverted over on to the pedicle, being divided to a considerable extent above so that when the kidney lies completely outside the wound edges the inverted fatty capsule occupies a position beneath its lower pole. (In some cases the fibrous capsule will adhere to the kidney very firmly, while in others it will tend to move with the fatty envelop; hence no definite rule can be formulated which will always govern the treatment of this structure. In the majority of cases, it has been left undisturbed.)

4. With a needle and catgut, the cut edges (Fig. 4) of the fatty capsule which were originally grasped by

6. Israel: Chirurgische Klinik der Nierenkrankheiten, Berlin, August Hirschwald, 1901.

7. Morris: Surgical Diseases of the Kidney and Ureter, Cassell & Co.

8. Walkow and Delitzin: Die Wanderniere, Berlin, August Hirschwald, 1899.

9. Glenard: Les ptoses viscerales, Paris, Felix Alcan, Editor, 1899.

clamps are united, thus transforming this inverted structure into a rather considerable ball of fat, which in most instances is about half the size of the kidney itself.

5. This ball of fat now constitutes a pedunculated flap and is transposed into the defect into which the kidney formerly slid. To insure its remaining in the desired location, it is anchored to the inner aspect of the abdominal wall directly under the lower angle of the wound by a stitch of the catgut which was used to unite its component parts into one spherical mass (Fig. 5).

6. The posterior abdominal wall is completely closed in layers without drainage.

I carried out the steps of the operation through an anterior gallbladder incision on one occasion. However, I do not recommend this method unless it is necessitated by other intra-abdominal work which cannot be equally done by the posterior route.

When this operation has been completed in the way I propose, three objects have been accomplished:

1. The self-lubricating lining of the extraperitoneal cavity has been removed. 2. The cavity itself below the kidney has been filled up. 3. The bared kidney and bared muscles of the posterior abdominal wall are definitely opposed to each other for adhesions to form.

No doubt the ball of fat remains permanently in position, although its real usefulness is probably exerted in the early period during which it holds the kidney up long enough for firm adhesions to take place between this organ and the posterior abdominal wall. Probably a combination of these two factors serves to maintain the kidney in its new position after the patient leaves the hospital.

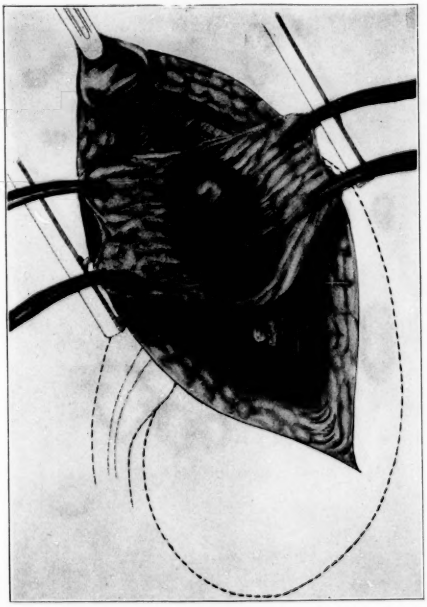

Fig. 3.—The fatty capsule divided along the convexity and grasped at numerous points.

Of course, the normal position for a kidney varies with the skeletal type of the individual, as has been best explained by Mills[10] of St. Louis. My operative technic may, therefore, have an additional value since it does not definitely fix, at the time of operation, the future position of the organ, but allows it to adjust itself to its environment and become ultimately attached in a location which corresponds to the patient's anatomic type.

The rationale of this operation is perhaps best understood by one who has read Bissell's[11] description of the perirenal fascia. He described it as an inverted bag which completely surrounds the kidney except in front where the two layers are separated for the entrance of the great vessels and below for the passage of the ureter. It is between the two layers below that the kidney prolapses, and it is this defect which I aim to block by transposing the inverted fatty capsule into it.

The Mayos[12] are the only surgeons who have, to my knowledge, made an attempt to treat movable kidney by obliterating the defect into which the organ has slid. They have long accomplished this result by attaching the hepatic flexure of the colon to the lateral abdominal wall. No doubt, Longyear[13] has accomplished the same thing in utilizing his "nephrocolic" ligament in immobilizing both the kidney and the bowel, although he does not seem to lay very especial stress on this feature of the procedure.

The after-treatment of such patients consists in accentuating the various mechanical influences which normally tend to force the kidney to a higher level and keep it there. We employ a snug binder with a soft elastic pad of common cotton batting over the right anterior abdomen and thus increase the influence of intra-abdominal pressure on the kidney.

The foot of the bed is kept elevated as high as the comfort of the patient will permit, this position having a natural tendency to carry the kidney upward. The patient remains on her back for two weeks, which is considered long enough for fairly firm adhesions to form between the kidney and the muscles on which it lies.

Forced feeding is indulged in, since it must be kept in mind that the newly constructed fat pad will correspond in size to any increase or decrease of the general body fat. It is a curious coincidence that the method which I propose is directly in line with the mechanical procedure employed by the internist in the treatment of these cases. I use the patient's fat in holding up the kidney as he does and indeed, make use of a pad, but fashion it out of the patient's perirenal fat and apply it directly, in place of the artificial pad which the internist applies to the anterior abdominal wall. Furthermore, this operation, as I brought out in an earlier paper,[14] accomplishes in a few minutes what requires months of patient reconstruction under the care of a competent dietitian.

10. Mills, R. W.: Body Habitus, Am. Jour. Roentgenol., April, 1917.
11. Bissell: Surgical Replacement of the Prolapsed Kidney, Surg., Gynec. and Obst., 1916, **23**.
12. Mayo, W. J., and Mayo, C. H.: Personal demonstration.
13. Longyear: Nephrocoloptosis, St. Louis, Mosby Company, 1910.
14. Bartlett: A Method of Surgical Treatment for Floating Kidney, Jour. Missouri Med. Assn., April, 1915.

Ureteral catherization has proved perfect remote functional ability in only one of these cases for the simple reason that only one patient has had postoperative symptoms urgent enough to induce her to submit to an examination. In this case there was no hydronephrosis, the urine itself was normal, and the functional test gave perfect results alike on both sides four years after the operation had been done. It may be added that in this case the recent symptoms were all pelvic, consisting largely of bladder manifestations pronounced by Dr. John R. Caulk of St. Louis to be caused by chronic metritis and rightsided salpingitis.

In describing the results of twenty of these operations, I am going to confine myself to the use of the patients' own words as far as the subjective side of the question is concerned, since the customary use of the words "cured," "improved" and "unimproved" permits so much latitude on the part of the interpreter that it can hardly be regarded as sufficiently accurate for the purpose in hand. Of still greater importance, perhaps, is the physical examination of such a person at the remote period which has fortunately been possible in a rather large percentage of my cases.

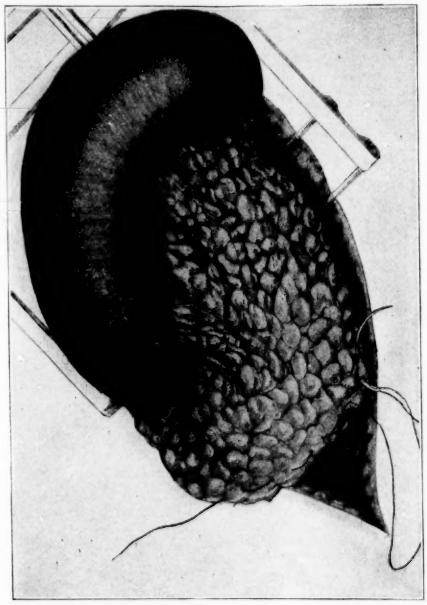

Fig. 4.—The fatty capsule, inverted, is being sutured into a ball by catching the points previously marked by clamps.

The operation described above has been done on twenty patients, of whom one (Patient 5940) died suddenly in the hospital nine days later. At 3:20 a. m. the nurse carried the bedpan to this woman on her statement that she wished to void. The patient remarked that she had had an unusually good sleep and felt uncommonly well. The pan was used and removed with but slight exertion on her part, but before the nurse could reach the door the patient cried out with violent pain in the region of the heart and clutched at her side with her left hand. She quickly became ashy and pulseless. The intern arrived two or three minutes later, but no heart sound could be heard. At this time the patient was cold, but apparently there was little respiratory difficulty. Death occurred in less than fifteen minutes from the time of the first complaint. No necropsy was obtained.

The remaining nineteen patients have all been heard from at periods after the operation varying as follows:

Four after 5 years; one after 4 years, 6 months; one after 4 years, 3 months; one after 4 years; one after 3 years, 6 months; one after 3 years; one after 1 year, 3 months; two after 11 months; one after 9 months; two after 8 months; one after 4 months; one after 2 months; one after 1½ months.

Fifteen of the nineteen patients who recovered have recently been subjected to physical examination by me personally, and hence I am in a position to know definitely regarding remote results. All of these nineteen patients were asked to answer specifically the following four questions:

1. Have you had any more (specific symptom asked in each case) which was your leading complaint before the operation?

The answer "no" was given in 68.4 per cent., while "yes" was the reply in 31.5 per cent.

2. Do you consider your general health to be better since the operation?

One patient replied that it was too soon to tell, while 68.4 per cent. answered in the affirmative and 26.3 in the negative.

3. Are there any new symptoms which you think have resulted from the operation?

Ninety-three and one-tenth per cent. answered "no," while one patient insisted on soreness in the region of the wound as a new symptom.

4. Do you think the kidney has stayed in place?

The affirmative reply was given in 100 per cent. of cases.

A. At the time the final physical examination was made on the patients I wrote down that in one patient the kidney was not palpable; in two patients it was of normal size; in two patients it was large; in three patients it was small; in six patients it was of moderate size.

B. The patients were all examined in a lying posture with reference to the position of the kidney, which was noted in three instances high or "normal"; in three others the lower pole was 2 cm. above the level of the umbilicus; in three others it was 1 cm. above this point; in four cases it was at the level of the umbilicus; in one other it reached slightly below this landmark.

C. Movement with respiration in the lying posture was next considered. In 66.6 per cent. of the cases none could be detected, and in 33.3 per cent. movement of 1 cm. or less was appreciable.

D. Movement with change of posture from the lying to the sitting or standing was then considered, with a result that this never exceeded 1 cm., and could be detected in some degrees in only 40 per cent. of those examined, while in 60 per cent. it was not appreciable at all.

These figures by no means do the subject justice, since they fail to express the amount of relief obtained, in many instances from intolerable suffering which rendered patients entirely unfit for any occupation or the enjoyment of life. However, they fufil their pur-

pose, since it has been my desire to present the proposed operative procedure to the most searching criticism.

(The underlying scheme of showing the kidney in various positions by dotted lines, employed in our illustrations, was suggested by Broedel's drawings in Kelley and Burnham's[15] excellent textbook. It must be added, for the purpose of clearness, that the method herein proposed has absolutely no point in common with that employed by Dr. Kelley.)

ABSTRACT OF DISCUSSION

DR. HUBERT A. ROYSTER, Raleigh, N. C.: We need to understand, as pointed out by the author, that a mere dropping of the kidney is not an indication for operation, because many times not only are there no symptoms present, but very often the patient herself does not know that she has a floating kidney. And in the words of a great philosopher, "What you don't know won't hurt you." Now these operations have not only failed to relieve symptoms very often, but they have failed to restore the kidney to its normal position, and at times have made conditions worse. Numbers of recurrences, I am sure, are on the list of every operating surgeon. It behooves us to understand just what are the symptoms of a misplaced kidney. I confess that I do not know. As I remarked, there are often no symptoms. At other times if symptoms occur, how do we know that they are due to this condition? So that there are a number of questions which suggest themselves. Is it necessary to show that a hydronephrosis is present before one decides to operate? Is the pain always due to a kink of the ureter? Does not pain sometimes exist from other causes, and are we certain that the nervous phenomena exhibited by the patient are due to a misplaced kidney? The operation proposed by the essayist, I feel inclined to say, has great merit. We might inquire, however, if the ball of fat will permanently hold up the kidney. Does fatty tissue hold up organs always? Will it not yield and will it invariably refrain from absorption? We have been told that the kidney drops very often on account of the absorption of the perirenal fat. If that is the case, do we always have enough fat left here to act as a ball on which we can place the kidney? It seems to me that is an important point to consider. Does the author of this operation find that he has in most cases enough of the perirenal fat left behind to serve his purpose? I am very glad to see that he makes a high incision. In most instances in my experience, when attempts have been made to restore kidneys to their normal position, they have been very far from it. Usually the kidney is placed backward against the posterior abdominal wall and very much lower than its actual anatomic position. Now if the high incision is made, we come nearer to placing it in its proper position than if we make a low incision. It is not my disposition to be too critical of this operation. If the author had given me an opportunity to try the operation before discussing it, I would certainly have done so, because I have numbers of these cases on my waiting list whom I have not dared to interfere with after the usual methods. I have preferred that these patients should wear a good corset and wait a while.

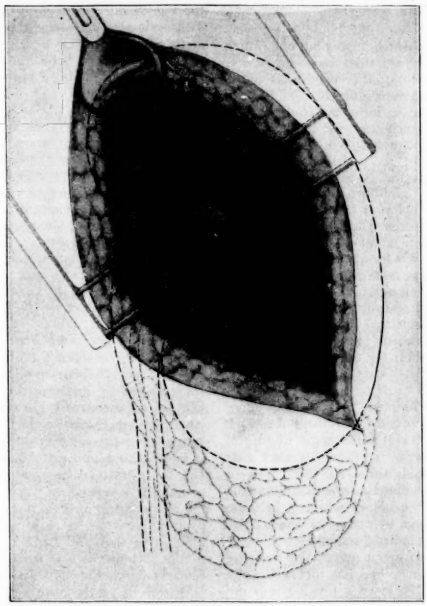

Fig. 5.—The replaced kidney is held in an elevated position by the ball of fat beneath it.

DR. DANIEL N. EISENDRATH, Chicago: If there is any field in modern surgery to which Dr. Bartlett's remarks in his paper this morning are applicable, it is this field of movable kidney. No greater number of sins of commission have been recorded than in these patients, who are operated on simply for the reason that the kidney is a little bit below the umbilicus, and perhaps has a little more mobility than normal. I was glad that Dr. Bartlett said that his chief indication in these twenty cases was the existence of an intermittent hydronephrosis. I would like to amplify this, that in some of these cases there is not an actual intermittent hydronephrosis, but often repeated occurrence of Dietl's crises. I have had experience of a number of cases in which a pyelitis is favored by a kinking, or at least by a malposition, of the kidney, an abnormality. I believe that is something we should add to the indications. Aside from that, I believe there is no indication for an operation on the movable kidney, for this reason: These patients are the subject of a general visceroptosis, and the immobilization of the kidney is only a portion of our therapeutic procedure, and since we are unable to agree on any standard method of immobilizing all of the abdominal viscera at once, it is unfair to subject these patients to operation. Dr. Royster mentioned the fact that in his experience these patients have very little fat. That has been mine also. Of course Dr. Bartlett's pictures showed a very ample support of perinephritic fat. In my experience there has been so little fat that the poles were lower. That is something we cannot reckon with. Another objection is that one is banking everything around the pelvis of the kidney and around the lower pole, chiefly depending on that for support. One is not anchoring any other portion of the kidney. The result may be to have compression of the ureter, because one is unable to gage the amount of pressure on the ureter, and unless it is fixed at the upper pole it is liable to rotate and give rise to symptoms the patient had before. Now there is one method of diagnosis which, as my experience in kidney surgery increases, I have come to regard as the only absolute test of the mobility of a kidney. I don't believe that one can tell by palpation through the abdominal wall whether a kidney is 1 or 2 cm. further down than it ought to be. The only method is by the use of pyelographs. There seems to me also a danger in this operation, namely, that it depends on fixation of the kidney for lower pole support and not denudation, as we think it necessary to fix the

15. Kelley and Burnham: Diseases of the Kidneys, Ureters, and Bladder, New York, D. Appleton & Co., 1914.

rest of the kidney in its new bed. I think the paper is timely.

DR. EMERY MARVEL, Atlantic City, N. J.: Prolapsing kidney causes suffering which is remedied by correcting the cause. Frequently, as stated, movable kidney is only one of a number of misplaced organs. Visceroptosis is not curable by correcting one unit in the chain which causes the symptoms. I would differ with Dr. Eisendrath when he asserts that the symptoms occasioned by the kidney are more pronounced in visceroptosis. I think perhaps the symptoms are more pronounced when the kidney is prolapsing, without general ptosis of the other viscera. I wish to express my appreciation to Dr. Bartlett for again calling attention to a surgical remedy which has grown into disrepute, but which has merits to entitle it to further consideration. I fully agree with Dr. Eisendrath that too frequent and too promiscuous operation is a sin of commission, but it also seems to me that we should be responsible for sins of omission if we declined to recognize the responsibility to correct prolapsing kidney, but, instead, permitted continued suffering which could be relieved. If we operate on the kidney alone which proves but one link in a chain that causes the trouble, we shall have great disappointments in our results. Among other conditions found with prolapsing kidney is that the ascending colon is dropped and by its distention a fecal sac is formed. There is frequently chronic appendicitis. In such cases the appendix certainly should be removed and some means should be employed by which the colon could regain its position and normal caliber. Dr. Bartlett strips back the colon and accentuates the displacement by interposing additional bulk below the kidney. The malposition of the colon is increasingly aggravated to a greater prolapsing position. Dr. Bartlett operates on the hypothesis that a prolapsing kidney is due to the loss of perirenal fat. That has been a theory about which I remain unconvinced. I should like to hear from Dr. Bartlett whether or not he is convinced that there is relatively more fat on the prolapsing than on the nonprolapsing kidney. It would seem that the great cause for prolapsing kidney is an anatomic one. The displacement is present mostly in subjects of straight spine, where there is a reduced shelf for the kidney to lie on.

DR. C. E. CANTRELL, Greenville, Texas: I think the profession has allowed the pendulum to swing too far in cautioning surgeons not to operate on kidneys. I am really sorry that more has not been done to prove or disprove the work of Edebohls. In our work we have found some wonderful results in inflammation of kidneys. I am sorry, also, that these gentlemen who have adversely discussed this paper, in a measure failed to see the very point that the essayist made the most advantage of, holding the kidney where it belongs. The kidney is held where it belongs by intra-abdominal pressure with very little help. One gentleman said he would not put a platform under the child to get it out of the well; he would pull it out with a rope. If he had left that well wide open to the child, would not he be more apt to go into the well? Now the essayist closes up this oily well that the kidney so easily slips down into, and leaves it so that a very little help will cause the intra-abdominal pressure to keep the kidney back on that shelf made by the coming forward of the spine. Let us not just condemn things because the tendency is to condemn. I would not want to operate on a kidney because it had been found by the Roentgen ray out of place. Unless kidneys produce symptoms one had better let them alone. If a woman who does not know she has a floating kidney comes complaining, one had better get a little clinical history and see if the kidney is at fault. Now let us study the field. Most movable kidneys are on the right side. On this side the colon is attached about 4 inches; on the other side 12 inches, which makes the difference. If the kidney gets clear down into the abdomen and makes trouble in the pelvis after it begins pressing on the organs, a clinician ought to be able to know something about it. It seems that they have failed to get the idea that the essayist in stripping the fat off of the muscles of the back clears that field. Perhaps he will get some adhesions there which will fix the kidney; the pad made by the fat and intra-abdominal pressure will hold it in place. If he goes further and slits the capsule, he will get better fixation, and I am glad now I know how to close the well. Let us hope we will get better results by closing up the well.

DR. MARTIN B. TINKER, Ithaca, N. Y.: I feel inclined to agree that Dr. Bartlett has been pretty severely criticized. There are two sides to this question, and one point that we all recognize: There are cases in which loose kidney is not associated with general visceroptosis, in which operation is indicated; other cases with general visceroptosis in which operation is contraindicated. The cases with hydronephrosis, Dietl's crises and the loose kidneys pressing in the region of the common duct and causing common duct obstruction definitely indicate operation. The number of cases for kidney fixation is small, but all experienced surgeons here must have operated occasionally and seen good, permanent results. It seems hardly necessary to call attention to the fact that the main feature of Dr. Bartlett's operation was also suggested by Nicholas Senn, who advised pushing the fatty capsule of the kidney into the opening below the lower pole. Dr. Robert T. Morris also suggested this method, I believe. Dr. Bartlett's method seems a more perfect utilization of the principle suggested by Drs. Senn and Morris. We should not operate in many cases of loose kidney, but in certain instances it is definitely indicated and gives good results. Furthermore, when we criticize Dr. Bartlett's method we should remember that probably 70 per cent. of us sterilize catgut according to his method and many are using his methods in treating large ventral hernia. The fact is, we know Bartlett's statements will bear careful scrutiny; this operation which he details is probably useful or he would not tell us so.

DR. WILLARD BARTLETT, St. Louis: I must thank the gentlemen who have discussed the paper for giving me an opportunity to bring out things, all of which are discussed in the body of the paper but which are left out because I read only the essence. Dr. Royster wants to know if we do have enough fat in every instance to make a ball to hold the kidney up. That is a very pertinent matter. In some instances we had not as much fat as we desired, but it does not seem to take very much when one considers the other two factors which are favorable. I do not say that the fat did it all, but it was accomplished by removing the large lubricating joint surface, and by skinning the kidney you do favor the formation of adhesions. I have noticed no difference in results when not much fat was in the fatty capsule. Dr. Eisendrath speaks of the possibility of the kidney rotating again because it has nothing under it but a little ball of fat. I must call Dr. Eisendrath's attention again to my very definite statement, that I depend on three factors just mentioned, and that the combination of them does seem to prevent the kidney from rotating on what is really not a very large ball of fat. I had thought of that and I am very glad Dr. Eisendrath brought it out. It does not happen, apparently. Dr. Eisendrath remarked that the only way to tell whether the kidney, after operation, is really movable or not is by making a pyelogram. This is all very well if one can ever in this world get a patient to submit to it twice. I must again call Dr. Eisendrath's attention to the fact that there is much denudation with the idea of getting adhesions. Dr. Marvel spoke of the other factors which hold up the kidney. There are sixteen of them considered in the paper, and I should perhaps have laid more stress on the fact that time did not permit discussing the other fifteen. I cannot answer Dr. Marvel's question in regard to the relative amount of fat around a prolapsed kidney. Dr. Tinker calls my attention—and I appreciate it very much that he does—to the fact that there is nothing at all new in surgery and that Senn packed gauze under the kidney years ago. All of these authorities are carefully written up in the paper and there is a long list of references. They are all given credit for everything they have done. I must thank Dr. Cantrell for having fully understood the thing and saved me a lot of repetition in closing the discussion.

Good Taste.—Good taste is nothing more nor less than a correct estimation of all proportions.—Lorand.

BACTERIAL VACCINE THERAPY*

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"If at the present time ten years of public notoriety have passed over any doctrine professing to be of importance in medical science, and if it has not succeeded in raising up a powerful body of able, learned, and ingenious advocates for its claims, the fault must be in the doctrine and not in the medical profession." This old criterion of Holmes is applicable to bacterial vaccine therapy this year, for though Fraenkel's work dates back a quarter of a century and Wright's fifteen years, in this country it was not until about ten years ago that any great degree of notoriety attached to the subject. The profession generally was about to grant vaccine therapy, at least autogenous vaccines, a more or less definite place when the new mass of data regarding nonspecific reactions began to appear and to cause grave doubts as to what were formerly regarded as fundamental principles.

A clear differentiation must be made between vaccine therapy and prophylaxis. The value of typhoid vaccine in prophylaxis is unquestioned, but the immunity thus obtained, if doses small enough to spare a sick patient from the danger of a reaction are given, may not be rapid enough to be of use in therapeutics. The impression has become more and more dominant that in order to have any definite assurance of improvement from vaccine injection, there must be a reaction. These reactions occur in nonspecific injection therapy. Whether all the improvement in specific bacterial therapy depends on the nonspecific reaction is still questionable. The tendency toward recurrence forms one of the objections to accepting improvement after vaccine therapy as being specific.

Regret over the extension of the meaning of the word vaccine beyond the true jennerian sense is now useless. Pasteur himself applied the term to his attenuated anthrax injections, and it has been broadened by some to include every substance injected for the purpose of producing an active immunity. A stricter use, and one which I believe should be generally followed, includes under vaccines only suspensions of the bodies of micro-organisms, living or dead. The products of bacterial growth are thus not vaccines, neither are they toxins, though poisonous or toxic, unless they have the property of stimulating the production of demonstrable antitoxins.

As between stock and autogenous vaccines in therapeutics, there is no question that the reports favor the latter. The vote is so strong that the evidence on first thought would be overwhelming for specificity. In fact, one of the great objections to vaccine therapy has been the apparently extremely narrow specificity of some of the reactions, no other vaccine than that made from the patient's own strain proving beneficial; and we are advised that sometimes even strains isolated early in the course of a treatment become useless and a fresh culture from the infected focus must be made for a second and again for a third vaccine. Autogenous vaccines are practically always fresher than stock vaccines, and there is ground for believing that toxicity or the reaction-producing quality decreases on storage. The commercial stock vaccines of the large biologic manufacturing laboratories, on the other hand, are safer than the usual autogenous vaccine. The vaccines made by laboratories holding federal license, while impossible of accurate control as to potency, are generally more carefully tested as to sterility and content of preservative, and are less likely than other vaccines to contain an excess of toxic protein. If the number of these preparations on the market were an index of their efficacy, one would say that they must be of some value.

* From the Hygienic Laboratory.

NEED FOR CONTROL OBSERVATIONS

The literature abounds with observations on this form of therapy, but the vaccine was administered for the most part without controls. It is obvious that the tendency is to report favorable results, while the series of nonsuccessful cases are less likely to be published. Largely on uncontrolled, but remarkably uniform, experience, we have come to think that staphylococcus vaccines are of benefit when proper surgical relief is also given. Why should we demand more scientific checks on observations in the wider field? Because it is high time that bacterial vaccines should either be found definitely useful under clearly outlined conditions or be discarded; in other words, practice has jumped far ahead of knowledge, and knowledge should recover its place. It is hoped that military hospitals in the various countries at war will enable studies to be made on a sufficiently large and complete scale to justify permanent conclusions. The uncertainties due to enthusiasm for any rather new treatment are obvious, but in the case of vaccine therapy our vision is particularly clouded. The seemingly scientific basis for the treatment tends to impress both doctor and patient, and the injection, the reaction and recovery therefrom can hardly help having some psychic effect. Vaccine therapy was formerly considered to be practically devoid of danger, but since benefit is now thought to be proportionate to toxic reaction, and particularly with the intravenous administration, accurate knowledge is essential to replace the present hit-or-miss plan.

My plea, then, is not for utter abandonment of therapeutic inoculation, but for its better control, and for the collation of such reliable data as will more clearly guide our future use of the method. In a laboratory experiment, unless a reaction is quantitatively well established when all the elements are known, there should always be as large a number of control or check tests using the known elements as there are of tests with the unknown element which is under trial. So with the therapeutic test of such substances as bacterial vaccines, since we cannot accurately forecast what will happen in the untreated cases, there should in each series be as large a number of these (or of cases treated nonspecifically) as of vaccine-treated cases, at the same time, under the same conditions, and with the same impartial observation, in order to secure the greatest accuracy from a given number of tests. It would be invidious to indicate examples, but a great part of the unqualifiedly favorable communications on vaccine therapy, reporting uniform benefit without severe reaction, bear internal evidence of lack of careful control, and as a rule the more favorable, the greater is this evidence.

On the other hand, we have some very carefully controlled reports. Last year Captain Whittington[1] of the Royal Army Medical Corps reported 230 cases of

1. Whittington, T. H.: A Report on the Use of Stock Vaccine in Infection by the Bacillus Typhosus, Lancet, London, 1916, **190**, 759-766.

typhoid fever, selected to conform to rigid standards of diagnosis and classified as to relative severity, and divided them into two lots, so that each vaccine-treated case was accurately checked with a nonvaccine-treated case in the same state of prophylactic vaccination, of the same severity, occurring in the same season, climate and locality, of the same sex, of about the same age and previous health, and receiving the same general treatment as to nursing, dieting, etc. Captain Whittington had the advice of Sir William Leishman on the earlier cases, so that there should be little to criticize as to dosage and time between doses. Such a series, though small, is far more valuable than thousands of cases collated from different observers without proper controls, with the chance favorable results in many instances acting as a spur to publication. Whittington's result are recorded in the accompanying table.

COMPARATIVE RESULTS FROM THE USE OF VACCINES IN TWO HUNDRED AND THIRTY TYPHOID FEVER CASES

	Mortality Per Cent.	Average Days Fever	Relapsed Cases Per Cent.	Cases with Complications or Sequelae Per Cent.
Vaccine-treated cases.	25	29.2	10.4	49.5
Controls	21	26.1	7.8	46

A comparison of these results shows that the controls did a little better than the vaccine-treated cases. Moreover, from the promptness with which some of the hemorrhages followed a vaccine injection, there was a decided suspicion that the vaccine might have induced this complication.

Whittington started with a bias in favor of the vaccine, which his earlier cases tended to confirm. This is one reason for lack of sufficient controls in most published series. Inspired by hope, the workers become so enthusiastic that the majority of the patients are given the "benefit" of the vaccine. To a laboratory worker it would seem that, with our present knowledge, no patient is unjustly treated in having this so-called specific treatment withheld.

The recent intravenous treatment of typhoid fever and some other conditions with various bodies, specific and nonspecific, gives striking results in a proportion of cases; but the dangers in the general use of this method, admitted by practically all who use it, restrict its field at present to the same carefully controlled circumstances as those previously outlined. These dangers are very apparent in intravenous treatment of animals with bacterial suspensions.

One other small but well controlled series was recently reported by a group of workers[2] under Dr. Park, of the Bureau of Laboratories of the New York City Health Department. These authors also, even up to the time the results were tabulated, believed that the vaccine (pertussis in this case) was of specific benefit. Outpatient material was used, open to the usual objection of uncertain home conditions and questionable information on the part of the parents. Of the more than 1,000 cases, 75 per cent. were rejected because they were not in the proper period of the disease for good comparison, because the diagnosis was somewhat uncertain, because the address was changed, because of unreliability, or for some similar reason. The parents were carefully cross-examined to rule out false reports, and visits were continued at the homes to complete the records. Alternate patients were chosen for the pertussis vaccine, the others receiving either influenza vaccine, milk solution diluted to resemble vaccine, or merely terpin hydrate by mouth. "In recording the remarks on the charts, the investigators were not biased by a knowledge of the vaccine employed, as they did not know until the study was finished which was which. The secret was safeguarded by the maker of the vaccine." Yet when the data were assembled, no matter what the grouping, whether according to intensity of onset, stage of disease, duration of disease, or intensity of paroxysms, the result was the same. The pertussis vaccine showed no superiority over the nonspecific treatments.

The experience of such clinicians as Dr. Billings, who has had the most expert technical assistance and advice, with parallel serologic studies, is more important than the mere numerical summary of the overburdened and much vaunted favorable literature on specific therapy. After years of trial, especially in chronic disorders which should offer the most favorable field, Dr. Billings[3] says that a personal and general hygienic management will accomplish quite as much without as with vaccines; and that vaccines without proper attention to a hygienic management are more likely to be harmful than helpful. It has been justly said that autogenous vaccination involves a hunt for latent foci of infection, and that this attention to the patient, with consequent local treatment of such foci as are found, is of itself of great benefit. Properly prepared and tested autogenous vaccines, however, are not within the reach of the great majority of patients. The bulk of vaccine therapy, if it is to become generally available, must be on the stock basis. Autogenous vaccines are often as ludicrously abused as stock vaccines. The differentiation of organisms is largely morphologic; the most easily grown are those found. The securing of a bacterium from the bodily discharges or mucous surfaces, even with a positive serum reaction, cannot be accepted as demonstrating a causative relationship to the disease, or any part of it, unless the bacterium is well known to be a pathogen. As for deeper cultures, those who work with laboratory animals know that normal tissues are by no means found constantly sterile.

The case in general is not proved, and doubt is increasing. Many keen observers believe that specific bacterial therapy is a failure. In some diseases claimed to be within the field of vaccines, such as pertussis, asthma, or bronchitis, a smallpox vaccination, a minor operation, or an intercurrent infection has been observed to precede partial or complete recovery. Why not a hypodermic injection, especially if followed by a systemic reaction? Moreover, there is a difference between changing the course of a disease, and changing it beneficially with any degree of certainty.

Negative results by one set of workers should not discredit the whole method of treatment. Slight but important modification by other workers may give more favorable results; but we should have the details, and above all, proper controls.

Hygienic Laboratory.

2. Von Sholly, Anna I.; Blum, Julius, and Smith, Luella: Therapeutic Value of Pertussis Vaccine in Whooping Cough, THE JOURNAL A. M. A., May 19, 1917, pp. 1451-1456.

3. Billings, Frank: Discussion on Vaccine Therapy, Tr. Cong. Am. Phys. and Surg., 1916, **10**, 135-148.

Science.—To the natural philosopher, to whom the whole extent of nature belongs, all the individual branches of science constitute the links of an endless chain, from which not one can be detached without destroying the harmony of the whole.—Schoedler.

ECTOPIC GESTATION

DIAGNOSIS AND TREATMENT *

L. J. LADINSKI, A.B., M.D.
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The signs and symptoms of ectopic gestation are more distinct and characteristic than those associated with other diseases of the pelvic organs, and may be divided into two groups: (1) the unruptured and (2) the ruptured. The following are the diagnostic signs and symptoms of the unruptured group:

1. Amenorrhea, or some irregularity of menstruation, is generally present (excepting when tubal pregnancy occurs during lactation). Menstruation in tubal pregnancy is as exceptional as it is in uterine pregnancy.

2. As a rule the patient feels that she is pregnant, and may have the characteristic subjective signs peculiar to some individuals. She may suspect that the pregnancy differs in some manner from her previous gestations.

3. Pain is a constant symptom of tubal pregnancy, and is due to the small hemorrhages caused by the eroding villi or the distention of the tube by the constantly growing ovum. The pain is sharp, lancinating and paroxysmal in character, and is not only referred to the affected side, but particularly to the ovarian region.

4. Uterine hemorrhage, which is the result of decidual degeneration and separation, is a constant symptom of the disease and usually begins about the sixth or seventh week, and invariably ceases after operation, or destruction of the ovum by rupture or abortion. In rare instances the disintegration of the decidua is retarded and there is comparatively little uterine bleeding, and as a consequence the decidua is eventually expelled in the form of a cast of the uterus. In my series of 280 operations, to date, there were but three decidual uterine casts.

5. The uterus is invariably somewhat enlarged; its consistence, however, is that of the normal nonpregnant uterus. In very exceptional cases, when the decidua remains intact and is subsequently expelled in the form of a cast, the uterus may present an elastic area in the anterior wall.

6. The presence of a distended tube on one side, which offers to the palpating finger the feel of an elastic, tender, fusiform and usually movable tumor, is characteristic. The physical signs of a tube distended by a gravid sac, while not easily distinguished from hydrosalpinx, hematosalpinx, and a thin-walled ovarian or parovarian cyst, can generally be readily differentiated from pyosalpinx, retroverted pregnant uterus, pelvic abscess or exudate, and uterine tumors.

7. Two negative signs of great importance are: the absence of elevation of temperature and the exclusion of uterine pregnancy. There is no rise of temperature in unruptured tubal pregnancy. After rupture has taken place, there may be a rise of temperature due to the infection of the extravasated blood in the peritoneal cavity by the colon bacillus. The leukocyte count and the hemoglobin test are of no value in the unruptured variety. After rupture there may be an increased leukocyte count and reduced hemoglobin percentage.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

DIFFERENTIAL DIAGNOSIS OF UTERINE AND EXTRA-UTERINE PREGNANCY

The most prolific source of error in the diagnosis of tubal pregnancy can be entirely eliminated by a correct differentiation between uterine and extra-uterine pregnancy. An infallible sign of early uterine pregnancy is the peculiar elastic area in the median line of the anterior wall of the body of the uterus, above the junction of body and cervix, to which I called attention some years ago. In one recent textbook on obstetrics, brief mention is made of this sign as "the bulging and softening in the anterior wall of the uterus." Another author describes it in full and attests its value. It is a good beginning, and it is to be hoped that sooner or later this valuable sign will receive the general recognition that it deserves.

In uterine pregnancy, the elastic ovea can invariably be felt after the fifth week; in tubal pregnancy, however, while the uterus is enlarged, the elastic area in the anterior wall is never present except in the very rare instances of uterine casts cited above. Thus the presence or absence of the elastic ovea will determine the question of uterine or extra-uterine pregnancy.

A correct history, and the elicitation of all the foregoing characteristic signs and symptoms, call for a positive diagnosis. The presence of some of the signs, especially if other pelvic lesions can be eliminated, justifies a presumptive diagnosis. It is a pretty safe rule to think of ectopic gestation in every patient who has had amenorrhea followed by irregular bleeding and pain on one side.

A condition that at times is difficult to differentiate from tubal pregnancy is that of a corpus luteum cyst. The signs and symptoms of the two conditions are occasionally identical, including, also, amenorrhea followed by irregular bleeding.

SYMPTOMS AND DIAGNOSIS IN RUPTURED TUBAL PREGNANCY

The additional local and constitutional signs of internal hemorrhage attendant on rupture are pathognomonic of the condition. However, in slight ruptures hemorrhage into the peritoneal cavity may be scanty and cause no further symptoms than a sudden severe lancinating pain, followed by general abdominal pains, nausea and vomiting. Likewise, when rupture takes place between the layers of the mesosalpinx, hemorrhage is usually not very profuse and produces very few signs of internal bleeding. Successive ruptures may occur at indefinite intervals and produce such slight symptoms as to escape attention, until the final and tragic rupture calls for immediate surgical interference.

The symptoms caused by rupture will depend for their severity on the extent of the rupture and the displacement of the ovum, and the amount of the internal hemorrhage, and will range and merge from the state of syncope to that of shock, collapse and occasionally unconsciousness. The anemia, the blanching of the mucous membranes, thirst, air hunger, shallow and rapid respiration, feeble pulse and subnormal temperature vary according to the degree of the hemorrhage and resisting power of the patient. Locally, the abdomen may be distended and tender, and palpation will elicit a fluid wave. Bimanual examination will, as a rule, reveal a soft, boggy tumor on one side or the other, which appears to the examining finger to be undefined in contour, and may change its shape under manipulation. When the gravid contents have become

entirely detached, and float in the peritoneal cavity, or when perforation has taken place during the early weeks of pregnancy, especially in the isthmian type, no localized pelvic tumor will be palpable, and the only evidences of rupture will be the presence of free fluid in the pelvic and abdominal cavities.

Shock and collapse due to hemorrhage from ruptured tubal pregnancy may simulate lesions of other abdominal viscera; for instance, perforation of the stomach, of the duodenum, of the small intestine or of the appendix; rupture of hydrosalpinx or of pyosalpinx; twisted pedicle of ovarian cyst; torsion of the tube; acute intestinal obstruction and renal and biliary colic. Study of the signs and symptoms presented by such cases will often clear up the diagnosis without any difficulty.

There are instances of intra-abdominal hemorrhage, however, which cannot be differentiated from ruptured tubal pregnancy, a number of which came under my observation. In one case profuse abdominal hemorrhage was due to spontaneous amputation of a twisted pedicle of an ovarian cyst; in another, to torsion of the tube, with cyst of the fimbriated extremity. In a third case, perforation of a graafian follicle, and in several cases rupture of a corpus luteum cyst was followed by severe intra-abdominal hemorrhage.

The pelvic findings in the unruptured varieties are characteristic and distinctive of the disease, while in the ruptured cases the signs of internal hemorrhage will often prove the determining diagnostic factor.

Exploratory vaginal section for diagnostic purposes is absolutely uncalled for in tubal pregnancy, and is an unnecessary and unsatisfactory surgical procedure.

TREATMENT

The only rational treatment is operative. While there is no difference of opinion on that score as regards the unruptured variety, deferred operation is still advocated in the ruptured variety, in cases of extreme shock. It is true that a certain percentage of patients recover spontaneously, especially in cases of tubal abortion, and occasionally early ruptures with the formation of hematoma and hematocele. It is also true that patients die of hemorrhage as a result of ruptured tubal pregnancy or tubal abortion when not operated on.

Moreover, it is undeniably a fact that both the mortality and morbidity of this disease are greatly increased by delayed operation. In my series of 280 operations to date, there were four deaths, three of which were reported in detail in my previous papers on the subject published in 1907 and 1912. In one case, death followed a simple salpingectomy in an unruptured tubal pregnancy, and the other three deaths were undoubtedly due to delayed operation.

Hemorrhage from a ruptured tube must be regarded in the same light as hemorrhage from any other source, and should be checked as quickly as possible, regardless of the severity of the shock. On several occasions I have operated when the patient was unconscious and required no anesthesia, either general or local.

It is my firm belief, justified by the results obtained in the cases of extreme collapse, that, if the operation is performed with ordinary skill and rapidity, the additional shock will be so slight that it cannot possibly be held responsible for a single death, especially if infusion or transfusion be resorted to as soon as the abdomen is opened.

Cases of tubal abortion and rupture present such a multitudinous variety in their course and termination that is is absolutely impossible to say from the signs and symptoms in a given case whether the hemorrhage will cease, or continue and become more profuse.

Moreover, I have noted that the presence of blood in the peritoneal cavity was an important element in the vasomoter paralysis and shock. The longer the patient was allowed to bleed from rupture or abortion, the greater the depression and the more profound was the shock; and this was regardless of the amount of blood lost. Likewise, the recuperative power of the patient after the operation depended more on the duration of the hemorrhage and shock than on their intensity at the time of operation.

Furthermore, the tendency to secondary shock becomes more marked as the interval between rupture and operation is prolonged.

Every patient in profound shock, operated on by me, recovered, and no patient was refused the benefit of operation as long as there was a cardiac beat.

The technic employed in ruptured cases is practically identical today with the method employed by me in my first operations, twenty-one years ago. The abdominal route is invariably employed, with the patient in the prone position. Previous vaginal examination will as a rule determine which side is affected. Through a median incision the hand is introduced into the abdominal cavity, and directed at once toward the affected side; the gravid sac or ruptured tube is enucleated and drawn into the wound. By grasping the outer border of the broad ligament with the hand, or occasionally with a clamp, further hemorrhage is checked.

No attempt is made to wipe away the blood or clots before the gravid tube is delivered at the wound, the steps of the operation having been carried out by touch only. As a precaution in tying off the pedicle, sufficient blood is wiped away with damp pads to expose the pedicle clearly to view. Before closing the abdomen the blood and clots are mopped out with damp gauze pads; drainage is never employed. In case of extreme shock, intravenous saline infusion is given simultaneously with the opening of the abdomen.

I cannot subscribe to the doctrine of deferring operation and trusting to chance, the inevitable result of which is rapidly to diminish the margin of reserve strength of the patient. Nor can I see the wisdom of the rule of watching the patient with the view of waiting with operation when the patient is improving, and operating if she grows worse.

If the patient's condition improves without operation, there can be no question that she would be better off because of the operation; and to wait until the patient grows worse entails an unnecessary loss of very precious moments, that may mean the possible sacrifice of life.

Shock is assuredly no contraindication to the immediate operation for ruptured tubal pregnancy.

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ABSTRACT OF DISCUSSION

DR. E. GUSTAV ZINKE, Cincinnati: A woman who has been perfectly well, who misses menstruation once or twice, who believes herself pregnant, and who has cramplike pains in one or both inguinal regions, with a palpable and perhaps pulsating tumor on one or both sides of the uterus, presents

a perfect picture of extra-uterine fetation. Symptoms of ectopic gestation do not arise until either internal or external rupture takes place. The pains experienced prior to rupture are "tubal pains," the result of distention and contraction of the tube; while the pains after rupture are caused by the blood coming in contact with the peritoneum.

Tubal abortion is frequently not recognized and often terminates in spontaneous recovery. If the case is properly diagnosticated, a hurried operation is never necessary. Tubal rupture between the broad ligament never places the patient's life in immediate jeopardy, and there is plenty of time to prepare for an operation. Tubal rupture into the peritoneal cavity, however, is always a grave accident. Its symptoms are, usually, marked and characteristic, and the sooner the patient is subjected to an operation, the more prompt the recovery. As a rule, there is sufficient time to prepare for an aseptic operation.

All cases of extra-uterine fetation which result in sub-peritoneal hematoma, peritubal hematocele, or retro-uterine hematocele, should be brought to early operation. Cases of advanced extra-uterine pregnancies are nearly always easy of diagnosis, and the patients should be operated on as soon as they can be made ready for the event. It is possible for a patient to bleed to death from a ruptured gestation sac within an hour or two, though such an occurrence is extremely rare, and is seldom brought to our attention. The histories of carefully recorded cases of rapid, fatal hemorrhage show that the great majority had been bleeding from twelve to twenty-four hours. A patient who bleeds to death within an hour could not be saved even by the man with the "jack-knife and shoestring."

Patients who are bloodless, pulseless, and completely exhausted are not good subjects for an operation. They die during the event or soon thereafter. The operator has done his duty, but where is the satisfaction? Weigh well the evidence in every instance.

DR. J. H. CARSTENS, Detroit: I agree with the author of the paper and I have preached the same doctrine. There are, of course, exceptional cases. I sent a patient home recently who had come to my office a few weeks previously. She was as white as our stenographer's shirtwaist. I could not feel her pulse. She said she had been sick for four or five days. I sent her straight to the hospital. I had operated on this woman a year previously for retroversion of the uterus. She was sterile and wanted to become pregnant. I opened the tubes, sewed them over and made a Gilliam operation. She recovered and menstruated right along and had menstruated twenty-seven days before she came to my office. There was nothing in the culdesac and no swelling on either side of the uterus. On the ninth day I said she was to get up. The next morning she was taken with a terrible pain and was in just as bad condition as the day she came in. I waited a few days until she was stronger and then operated, as she developed fever. I opened the abdomen and found a lot of blood clots in a cavity, well walled in, just above the bladder. I lifted up the little sac, put a clamp on it and removed it. It proved to be a tubal pregnancy not more than two weeks old. So, you see we are sometimes greatly mistaken. If I had operated the first or second day she would have died. There are certain rare cases in which one had better wait a little.

DR. WILLIAM W. GOLDEN, Elkins, W. Va.: Unless I missed some of the statements which the author has made in reference to diagnosis, I am inclined to think that he has not enumerated all the symptoms. I should like to call attention to a symptom or sign which I have observed in a small series of cases. In cases in which bleeding from the uterus is present to a marked degree, there is a strikingly pale appearance of the cervix as compared with the mucous membrane of the vagina. I know that this is contrary to what is stated in the textbooks. I have, however, observed it in a small but appreciable number of successive cases. That no one should refer to this in literature is possibly explained by the fact that an inspection of the vagina is usually not made in cases of ectopic gestation. I ask that you look for this sign in your future cases. In the differential diagnosis the author asserted that the absence of fever favors the diagnosis of ectopic gestation, admitting, however, that fever is often present after rupture has occurred. But in some cases rupture is a slow process and not evidenced by the typical critical symptoms. In view of this it seems to me that it is not altogether safe to teach the general practitioner to be guided in the differential diagnosis by the presence or the absence of fever. I have frequently seen practitioners mistake ectopic gestation for salpingitis because of the presence of fever.

DR. EDWARD J. MCOSCAR, Fort Wayne, Ind.: It is rare that the opportunity offers to study the progress of ectopic pregnancy previous to rupture. In some of these cases the first history which the physician obtains is that the patient has suddenly fainted and he finds her in a state of alarming collapse. He may then learn that she has missed a period or two, with subsequent irregular discharge of blood and clot, attended with cramping attacks. Last year nine patients came into my hands in whom there was rupture, and whom I had no opportunity to see beforehand. Five were in collapse from free hemorrhage. All were operated on without waiting and all recovered. We must remember that hemorrhage is not shock and that shock is not hemorrhage. These patients rarely have shock. Shock results from trauma of sufficient force to do violence to the nerve centers. A little tear of a tube is not a violent thing in itself, nor necessarily dangerous if there be no hemorrhage. It is the hemorrhage that calls for intervention, and if we can operate quickly enough to stop the hemorrhage and get the patient to bed, she will recover.

DR. LOUIS J. LADINSKI, New York: One of the points emphasized in the paper was that absence of temperature aids in the diagnosis of unruptured tubal pregnancy. After rupture has taken place, however, there may be elevation of temperature due to infection of the extravasated blood by the colon bacillus.

The main object in presenting this paper was again to offer a plea for immediate operation in ruptured tubal pregnancy without any regard to the severity of the shock. There is not a single valid reason, based either on theoretical grounds or practical experience, to justify delay in operation in tragic cases. I have never seen a case result fatally in which the patient was operated on in the most profound shock, and I know of a number of patients who died from ruptured tubal pregnancy after operation, not because of the shock, but from complications due to delay. It is generally admitted that patients die of hemorrhage due to ruptured tubal pregnancy when not operated on. I had one experience of that kind. The patient sustained a rupture while being examined in my office, and as this happened some years ago, at the time when the pendulum was swinging toward delay in operating, I was influenced by the fact and kept the patient in the office for more than an hour. As she improved at first under morphin and stimulants, I was beginning to feel a false sense of security in the opinion then gaining ground that these patients never die of hemorrhage; but she suddenly grew worse and I transferred her by ambulance to a hospital within eight blocks of my office. She died as soon as she reached the operating room. Had this patient reached the operating room, as she should have, ten or fifteen minutes earlier, she would have been saved.

Opium and Camphor.—Since the beginning of the war, on account of greatly decreased imports of chemicals and medicines, including opium, the government of Japan has encouraged the production of the latter drug. The output in 1916 was 2,535 pounds, and this year the amount is expected to be increased. In the province of Osaka it is said the increase will be 20 per cent. over last year. The estimated quantity of crude camphor to be produced for export from Formosa for the year ending April 1, 1918, is 7,056,720 pounds, 4,350,000 pounds of which, it is said, will go to the celluloid manufacturers of America. Bad weather may, the Consul General at Yokohama reports (*Commerce Reports*, July 31 and Aug. 2, 1917), reduce this amount considerably.

Military Medicine and Surgery

THE CASUALTY CLEARING STATIONS

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Prior to the present war, this unit was designated a "clearing hospital"; but the nomenclature was altered to "casualty clearing station" soon after the commencement of the present campaign. The unit corresponds, more or less closely, in organization, establishment and function to the "evacuation hospital" of the United States Army.

The following remarks apply to the "casualty clearing station" of the British Army, and may possibly be found of service to officers doing duty with an "evacuation hospital" of the United States Army.

Establishment.—This consists of a lieutenant-colonel, R. A. M. C., in command of the unit; six other medical officers; one quartermaster; eight sergeants; seven corporals, and sixty-two privates.

Attached.—There are three chaplains, one interpreter and six Ambulance Service Corps drivers (mechanical transport).

Transport.—This consists of three 3-ton lorries.

The sergeants are allotted for duties as follows: nursing duties, 2; steward, 1; dispenser, 1; cook, 1; pack storekeeper, 1; clerk, 1, and general duty, 1.

Two of the privates are trained in the use of carpenters' tools.

Nursing Service.—Nursing sisters are appointed, whenever circumstances permit, to a casualty clearing station.

Function.—The casualty clearing station forms a connecting link between the field ambulances and the stationary and general hospitals. It receives patients from the field ambulances by means of the motor ambulance convoy, and it transmits them to the stationary and general hospitals by means of the ambulance trains. It will be readily understood that the functions of a casualty clearing station must necessarily be very elastic; during periods of comparative inactivity it may act more or less as an advanced stationary hospital, transmitting only such patients toward the base as are unlikely to be fit for duty within a reasonable period, while during a period of active battle it acts as a "sieve," winnowing the patients, according to the severity and nature of their injuries, to the base, the "rest station," etc. Again, a casualty clearing station may be allotted special functions; for example, one casualty clearing station may be detailed to deal entirely with cases of abdominal wounds, such patients being brought as rapidly as possible from the front to the special casualty clearing station, and there operated on and retained until fit for transport to the base.

Position.—The position of a casualty clearing station in the area of operations must necessarily vary with the military exigencies of the time being.

The unit will almost invariably be situated close to a railway station and within from 5 to 10 miles of the front line, but may not infrequently be pushed farther forward than this in order to lessen the journey of patients by road as far as possible.

Organization.—In European warfare, buildings will be utilized so far as possible, but very frequently the accommodation will necessarily be in huts, tents, or a combination of all three.

An important point to remember in the establishment and organization of a casualty clearing station is that it must be capable of rapid and very considerable expansion; ordinarily it is equipped for 200 patients, but it may — at short notice — be required to accommodate a very much larger number.

Consequently it should always be insured that suitable ground is available for the erection of tents, and that any available buildings[1] are prepared for conversion into wards, etc., for patients, should the necessity arise.

It will be found advantageous to organize a casualty clearing station into the following sections or departments: (*a*) reception; (*b*) cooking; (*c*) packstore; (*d*) nursing, and (*e*) operating.

(*a*) *Reception of Patients.*—Arrangements for the reception of patients must be carefully organized in order to prevent any possibility of confusion when large convoys of wounded arrive. There should be a wide and clearly marked entrance for motor ambulances, with an equally clear separate exit to the main road. This is necessary in order that ambulance vehicles may enter, unload their patients at the "reception" hut or building, and depart without being obliged to turn around or to cause any delay or obstruction to the vehicles behind.

A "stretcher party" must always be on duty, night and day, in order to unload patients promptly on arrival. In the "reception" room the patients are seen and rapidly sorted into groups, the lightly wounded being sent to one department, the seriously wounded to another, patients requiring immediate operation to another, etc. Each department is worked by its own staff, and, during active operations, the personnel will be kept extremely busy.

The reception room must be of ample dimensions, as many hundreds of patients may arrive at the same time, and must be rapidly and efficiently dealt with. The admission and discharge books are here filled in by the clerks detailed for the duty.

(*b*) *Cooking.*—The kitchen arrangements must be complete in every detail, diets for every class of patient being required almost daily. Soups and other hot drinks should be available at any hour for patients on arrival.

(*c*) *Packstore.*—Here the patients' arms and equipment are taken possession of, tied into bundles and labeled.

(*d*) *Nursing.*—This comprises the "hospital" section proper of the unit. Wards should be organized and equipped for each class of patient; those for patients that are operated on being in close proximity to the operating theater, while those for patients less seriously wounded may be more distantly situated, possibly in tents. The operating room, Roentgen-ray room, and "serious surgical" wards should be close to each other and conveniently situated.

Lastly, the accommodation, comfort and feeding of the personnel of the unit must not be forgotten. No pains should be spared to insure the comfort and well-being of the medical personnel, every member of which will be extremely hard worked. Nursing sisters

1. As a rough estimate of the number of slightly wounded patients that may be accommodated in a building for one night, it may be reckoned that, in rooms over 15 feet but under 20 feet in width, one man can be accommodated for every yard of length, while in rooms 20 feet and more in width two men can be accommodated for every yard of length.

especially are rather prone, if permitted, to neglect their own well-being, and will cheerfully put up with any discomfort, and possibly neglect their meals, while at the same time working themselves to the point of exhaustion in the interests of their patients. This self-sacrifice is most laudable, but is certain to lead to breakdown if unchecked. It will consequently be necessary for the commanding officer of a casualty clearing station to insure that the nursing sisters have comfortable quarters, that they have a due proportion of rest and sleep, that their meals are well cooked and served, and that there is due insistance that they obtain their meals regularly; otherwise during a period of stress it may be found that sisters and nurses will, if permitted, work for twelve or fifteen hours at a stretch without food or rest.

It must not be inferred from the foregoing that work in a casualty clearing station is in a continuous condition of high pressure. During battle periods the amount of work to be got through is enormous, the operating work especially being extremely onerous, and every member of the personnel is working at very high pressure; but during the comparatively "quiet" intervals, matters are much easier, and it is during these intervals that very much may be done in the way of organization in order to prepare for the busy days and nights in the future.

Office, Surgeon-General of the Army.

MEDICAL IMPRESSIONS IN A BASE HOSPITAL

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FRANCE

After two months' experience as medical director of U. S. Base Hospital No. 12 (a Chicago organization), stationed "somewhere in France," I have come to the conclusion that the American physician cannot afford to miss the opportunity which presents itself. No other department in the service serves a more important function, and I am firmly convinced that the efficiency of the fighting force depends largely on the efficiency of the medical corps.

Mr. Julius Rosenwald of the Council of National Defense, in discussing the ultimate outcome of the war, tritely stated that it would be the "survival of the best fed." The physician not only passes on the fitness of the volunteer and conscript, and must dispose of him when he is sick or wounded, but is also of necessity the dietitian and the sanitarian.

JUDGMENT AN ASSET

When dealing with thousands of men drawn from all walks of life, and representative of every social stratum, one realizes the necessity of carefully observing the workings of the human mind and of closely studying the individual.

The most difficult task which has confronted us is distinguishing the real from the spurious. By the latter I do not refer to the neurasthenic, who will be touched on later. Every soldier who has seen active service knows the symptoms of the more prevalent diseases, such as trench fever, gas poisoning, and disordered action of the heart. Occasionally he will recite to you in textbook fashion his symptoms, and will attempt to play on your sympathies, not because he is a slacker — there are none in the Army — but because he is tired physically and sometimes nervously. It is this type of case which taxes one's judgment. Sentiment must be utterly eliminated. The individual must be subordinated to the cause which he serves. A trip to "Blighty" is what he wants, but a few weeks in a nearby convalescent camp again puts him in shape for line duty.

The severe physical and nervous exertion to which the military man is subjected necessarily lights up neurotic tendencies. The more common neuroses encountered are, first, disordered action of the heart (D. A. H.), second, shell shock hysteria, and, third, exhaustion neuroses.

Disordered Action of the Heart.—These patients complain of precordial pains. These rarely simulate angina; more often the distribution and the radiation of the pain depend on the suggestive and leading questions asked. Palpitation is an almost constant concommitant, but dyspnea on exertion is not usually mentioned by the uninitiated, whereas the veteran has learned that shortness of breath is highly suggestive of heart disease. Anasarca of the extremities never occurs. There are no changes in the size and shape of the heart, but occasionally an accidental murmur is audible. The blood pressure is unaffected. Rest, suggestion and graduated exercise usually bring about prompt recovery.

Shell Shock Hysteria.—The hysteria and neurasthenia which develop in uninjured men after a severe engagement manifest themselves in innumerable ways, and almost invariably we are able to elicit a history suggesting a previous neuropathic tendency which antedates the war. Hysteria is more likely to occur after shell shock, but may develop without apparent cause. I have not had opportunity to observe many cases of shell shock, as these patients are sent to special neurologic hospitals. However, it is not common to see cases of pseudomusculospiral paralysis coming on suddenly with wrist-drop and perversions of the sensation, which bear no relationship to the course of the nerve; also paraplegia of the lower extremities, developing while the patient is under observation for some other condition, without any sensory disturbance and, of course, with full retention of bladder and rectal control.

Exhaustion Neuroses.—The neurasthenia is usually the ordinary exhaustion neurosis, and is sent to us labeled "debility." Introspection, fatigue on slight exertion, despite the fact that the muscles are hard and firm, sluggish speech, weak voice and impaired memory are the common evidences.

Functional neurologic pictures are the same as are those met in civil practice; only they are much more frequent, and quite naturally so.

NEED FOR PRACTICAL MEN

I sincerely hope that the members of the medical profession will not wait for conscription. There is plenty of work to be done, and hard working, practical men of ability are needed. The ultrascientific man or the man with a hobby would feel very much out of place in a base hospital such as ours. The work must be done quickly and accurately. The compensation for the work is the satisfaction in knowing that one is "doing one's bit."

A PLEA FOR THE NONCATHETERIZATION OF THE URINARY BLADDER

IN CASES OF GUNSHOT WOUNDS OF THE SPINAL COLUMN

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Tradition and habit of mind are hard to overcome. From the earliest history of medicine, it has been customary to insert a catheter into the urinary bladder whenever it became distended, without consideration of the underlying pathologic condition.

To propose that a urinary bladder should seldom, if ever, be catheterized is radical, and such a broad statement demands analysis.

I believe that logic and experience teach that in the cases of injury to the spinal cord, the urinary bladder should not be emptied by catheterization, unless there is a pathologic stricture of the urethra which would prevent overflow.

A few years ago I had occasion to go over all the histories of a 1,500 bed general hospital. These histories covered a period of twenty years, and after careful search I failed to find a single case of spontaneous rupture of the urinary bladder. This in itself justifies the conclusion that a spontaneous rupture of the urinary bladder is extremely rare.

In the cases of paralysis of the bladder wall, occurring in injuries to the spinal cord, the bladder may become greatly distended without pain or discomfort to the patient. It has been my experience that it is practically impossible to catheterize a urinary bladder over any considerable period of time without infection, no matter how carefully aseptic the technic is carried out.

Infection of the genito-urinary tract is particularly liable to occur in spinal injury cases in which the tissues suffer nutritional disturbances with accompanying lowered resistance. It is well recognized that one of the most potent and frequent direct causes of death in injuries of the spinal cord is the acute cystitis and purulent pyelitis.

Granting this, every measure should be adopted to prevent this inflammation, which I believe is practically always caused by the catheterization, as I have never seen a single case of cystitis in a patient suffering from a spinal cord injury that had not been catheterized. That isolated cases may occur, I grant.

One recognizes how difficult it is to carry out a proper aseptic technic in the catheterization of patients in the field.

A natural question arises: Are the tissues of the bladder or the kidneys materially damaged by allowing the bladder to become distended until it overflows?

I can only answer that, after practicing the procedure of noncatheterization for a period of ten years in patients suffering from a pathologic condition of the spinal cord, in a considerable number of cases I have not experienced any deleterious effects. In one case of a benign spinal cord tumor, which was finally located and removed, the patient was allowed to go with a bladder distended to the umbilicus for nearly two years. She finally regained complete control of the bladder function. During this time there was no evidence of disturbance of or injury to the kidneys. I never observed any evidence of disturbed kidney function from this practice of allowing a bladder to become distended and to overflow.

In such cases the urine can be collected in a satisfactory way, so that the bedding is kept relatively dry and the patient comfortable.

To what ultimate end does this noncatheterization of the urinary bladder in these spinal injury cases lead?

In my judgment, it protects the patient almost absolutely from the dangers of an acute, fatal cystitis and pyelitis, and allows for future surgical treatment of the cord if the pathologic condition is such as to permit it. I am here assuming that it is practically impossible in the early hours or even days following the spinal injury to make a positive differential diagnosis of the exact extent of the lesion of the cord; that is, to distinguish between contusion, pressure from bone, blood or exudate, and a complete severance of the structure.

I am not sure that it is ever possible to recognize the exact pathologic condition of the cord without the evidence obtained by surgical exploration, and I am not prepared to say that it would not be better surgical judgment to explore in every case. However, it is not my purpose to discuss this phase of the question at this time. My one thought is to make an urgent plea for the protection of these patients from immediate death caused by inflammation of the genito-urinary tract, which inflammation is, in my judgment, practically always due to catheterization. I can see no justification in suprapubic drainage unless a severe cystitis exists.

One case will suffice to illustrate my point, a case which Colonel Ballance saw in consultation. It is probable that this patient could have survived the injury to the spinal column and cord, had the foreign body been removed and the lamina elevated, provided there had not been the superimposed cystitis and pyelitis.

REPORT OF CASE

History.—J. H. (19483), private, aged 19, wounded, July 7, 1917, entered this hospital sixteen hours later with a gunshot wound of the back nearly in the midline opposite the first or second dorsal vertebra. The wound appeared clean, and the patient's temperature was normal. The findings of a complete transverse lesion of the spinal cord, namely, complete loss of motor and sensory power, absence of deep and superficial reflexes, hyperesthesia above the paralyzed area, and loss of bladder and rectal control were present. The lesion corresponded to an injury of the cord opposite the third and fourth dorsal vetebrae.

July 8, the patient was very tympanitic. Vomiting was marked. Phrenic nerve irritation was evidenced by persistent hiccup. The bladder was distended but the patient was not catheterized while in this hospital, although a catheter had been passed several times at the casualty clearing station. The patient had a marked cough, and both lungs were filled with râles, but no evidence of a penetrating wound of the chest was found. His general condition was very poor and a laminectomy was not advised. His temperature never went above 100.

His condition became rapidly worse, and he died, July 13, six days after his injury.

The clinical diagnosis was gunshot wound of the back with spinal cord injury opposite the third and fourth dorsal vertebrae; pulmonary edema.

Postmortem Findings.—There was a gunshot wound over the second dorsal spine, which was fractured. A foreign body (a piece of metal 1½ inches long) was embedded in the lamina of the fourth dorsal vertebra on the left side. A few strands of clothing had been introduced with it. The metal fragment was projecting into the canal, and some extradural pus was present over an area about 4 inches long in the

region of the wound. The cord itself was not injured. No intradural hemorrhage was present. There was one small patch of pus just below the site of injury, with a slight softening of the cord in this area. There was edema of the lung. The heart was pale and dilated, with no organic lesion; the muscles were softer than normal. The liver, spleen and kidneys showed evidence of infection with an anaerobic gas-producing bacillus; an early pyelitis was present. In the bladder, cystitis was present.

The anatomic diagnosis was fracture of the second dorsal spine with compression of the cord; edema of the lungs; cystitis.

SUMMARY

1. Infection of the genito-urinary tract is the most common and immediate direct cause of death in cases of gunshot wounds of the spinal cord and column, accompanied by paralysis.

2. It is almost impossible to catheterize such a patient, no matter how carefully it is done, without an infection and subsequent inflammation of the genito-urinary tract. Infection rarely, if ever, occurs without catheterization.

3. Distention of the urinary-bladder, allowing it to overflow, is not harmful to the bladder or kidneys.

4. Many patients suffering from an injury to the spinal cord and column may ultimately be saved by surgical operation if they do not succumb to an early cystitis and purulent pyelitis.

MODE OF INFECTION, MEANS OF PREVENTION AND SPECIFIC TREATMENT OF EPIDEMIC MENINGITIS *

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This article has been prepared because of the appearance of epidemic meningitis among the armed forces of the United States, and for the purpose of bringing the essential facts of our present knowledge of that disease to the immediate attention of the medical officers responsible for the health of the troops and also of the physicians equally responsible for the health of the civil population.

Epidemic meningitis, cerebrospinal fever, or spotted fever, as the disease is variously called, is an old foe of the armed camp, and having ravaged the European armies, has already attacked our own. Moreover, it has prevailed in this country sometimes as epidemics, sometimes sporadically, without complete cessation, since the severe outbreaks of 1904 and 1905. At about the same period, epidemics of the disease appeared in many European countries, and within the next two or three years they penetrated into Africa, South America, Australasia, etc. In other words, a pandemic of epidemic meningitis spread over the world between the years 1904 and 1910, since which time the disease has not again become quiescent in Europe or in this country. In the United States each winter and spring has witnessed, now in one locality and now in another, the appearance of cases or groups of cases of meningococcus meningitis. Thus, from the period of severe epidemics a number of foci in the country have remained over in which the meningococcus still persists.

The meningococcus is unknown in nature aside from the human host. Thus its survival is possible only in human beings; and present knowledge indicates that the persistence in a community is not attributable so much to active cases of epidemic meningitis as to the occurrence there of chronic carriers of the micro-organism, who either reside in the localities in which the disease continues to arise or, because of more peripatetic habits, move about freely from place to place. As these carrying persons are both unsuspected and undetected, they become the malevolent, if innocent, agency through which the infection is kept alive and propagated.

This situation, deplorable enough in ordinary times, becomes at once a serious menace when large numbers of recruits are assembled into camps. The recruits are, in the first instance, of the ages more highly susceptible to the disease. They form a body also which has for the most part escaped exposure either by reason of the immunity of the locality from which they come, or because of the circumstances immediately surrounding their individual mode of life. Once, however, that they are brought together into large aggregations from widely divergent communities, the introduction of the meningococcus carrier among them, considering his distribution in the civil population, is a foregone conclusion. The carrier being present, the close personal association inevitable in camp life prepares the way for the ready communication of the meningococcus to others.

These secondary carriers, as they may be conveniently called, harbor the meningococcus for shorter or longer periods of time. A small part only are converted into chronic carriers of the micro-organism, while another part, of variable dimensions, develops meningitis. Very soon, therefore, a vicious circle is established, since each carrier and each case of meningitis thus produced becomes potentially able to pass the meningococcus on to still other persons. The object of the bacteriologic control of epidemic meningitis is the breaking of this circle, and it is best and may be successfully accomplished by the detection and detention of the meningococcus carrier.

MODE OF INFECTION

The meningococcus enters and leaves the body by way of the secretions of the nasopharyngeal membrane. Since no other avenue of entrance or exit is known, the bacteriologic control of epidemic meningitis centers on those membranes. The meningococcus passes from the mucous membrane to the meninges, in which it multiplies still further and thus sets up an acute inflammation called meningitis. It is not established whether the micro-organism passes directly to the nervous system by way of the lymphatic connections between the nasopharyngeal mucosa and the meninges, which extend along the olfactory nerves, or indirectly by way of the blood. The former route is the one probably taken; but it not infrequently happens that the meningococcus may be cultivated from the general blood early in the course of the infection. Moreover, the occasional occurrence during the meningitis of metastatic meningococcal inflammations, such as arthritis, panophthalmitis and endocarditis, indicates the ability of the micro-organism to survive in and be implanted from the blood. However this may be, there is reason to believe that the meningococcus multiplies in the nasopharyngeal mucosa before

* From the Laboratories of the Rockefeller Institute for Medical Research.

* As the subject matter of this article is of timely importance, the reprints have been prepared in advance of the publication in THE JOURNAL, and can be had by sending a stamped, self-addressed envelope to this office or to the author.

it invades the meninges, and the interval between the two processes may be brief or long, which is equivalent to stating that every case of epidemic meningitis develops out of a carrier.

Two classes of persons harbor the meningococcus in the secretions of the nasopharyngeal mucous membranes: first, persons suffering from epidemic meningitis; second, healthy carriers of the micro-organism. The potential dangers from the two sources are unequal. The ill patient is usually confined in bed; he does not tend to move about and come into contact with many persons. While confined, he is dangerous to the doctor and the sickroom attendants and, if in a hospital ward, to other patients. It is only when convalescent that, if not restrained, he menaces others. The healthy carrier, being usually unsuspected, is unhampered in his movements. He is a menace, therefore, to a wide and indefinite number of persons.

In both instances the mechanism of dissemination is identical, and consists in the ejection of the nasopharyngeal secretions into the surrounding atmosphere. This ejection does not take place during ordinary breathing and little, as a rule, during quiet speaking. But in loud speaking and particularly in coughing, sneezing, hawking and spitting, the secretions may be sprayed and scattered widely.

A more indirect means of communication is by way of the hands soiled with the secretions of the nose and throat, and by insects and particularly by house flies, which, becoming contaminated by feeding on the secretions, may carry them to the nose and mouth of other persons on whom they alight. The meningococcus is, however, a fragile micro-organism, and does not long withstand ordinary air temperatures and the drying of the secretions containing them; once separated from the nasopharynx, it soon succumbs in external nature. Probably the degree of viability of the meningococcus in external nature is not exactly indicated by cultivation tests; it is quite possible that in the more favorable medium of the nasopharyngeal secretions it will multiply when no growth takes place in artificial cultures.

Not only has the connection between the spraying of the contaminated secretions and the occurrence of carriers of the meningococcus been shown, but the greater numerical relationship between violent spraying and carrier-production established. Chronic carriers or patients suffering from meningitis, who suffered at the same time from a severe cough, gave rise to more carriers and contaminated persons over a greater area than has been found otherwise to be the case.

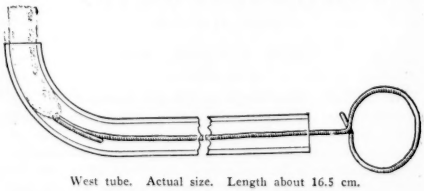
The time relation between carriage of the meningococcus, the occurrence of infection, and the development of the symptoms and lesions of epidemic meningitis has also been noted in a number of instances. Sometimes the fact of the carriage has been discovered several days or weeks before the infection arose; sometimes the interval was so brief as to warrant the assumption that the individuals observed were already in the premeningitic stage of the infection when the bacteriologic examinations were made.

Since the nasopharynx harbors the meningococcus practically always at the onset of the infection which eventuates in meningitis, there have been observed in the course of bacteriologic examinations instances in which the signs of meningitis were still absent, the cerebrospinal fluid showed few morphologic and chemical changes, and the meningococcus was not detected in the fluid by the microscope or in cultures — and yet the putting together of all the findings, including those of meningococcus in the nasopharynx, led to a diagnosis of epidemic meningitis, which subsequent events confirmed. This possibility of very early diagnosis may be of high importance in view of the far better clinical results obtainable by means of specific therapy when it is promptly applied.[1]

The cycle of events which lead to contamination and to infection with the meningococcus is now apparent. A meningococcus carrier is introduced into a group of persons of the more susceptible ages. Of the latter, a certain number become contaminated through aspirating the nasopharyngeal secretions which he ejects; of those thus contaminated, a variable number actually become infected and develop meningitis, while a larger number are converted either into temporary (evanescent) or more enduring (chronic) carriers. The patient during the acute illness and for an indefinite period while convalescent is also a carrier. Hence the number of carriers produced exceeds the number of cases of infection arising, from which it may be concluded that the individual susceptibility to epidemic meningitis is low.

DETECTION OF CARRIERS

A special bacteriologic technic has been devised to discover the meningococcus in the secretions of the nose and throat. The secretions are collected free of admixture with the saliva and the aerobic bacteria contained in them, and are grown in a medium favorable to the multiplication of the meningococcus.



West tube. Actual size. Length about 16.5 cm.

Swabbing.—The secretions are obtained in a form suitable for cultivation by swabbing the nasopharyngeal mucosa. While in skilled hands the open swab may be successfully employed, the employment of the West[2] tube can be highly recommended. The instrument consists of a glass tube about 7 mm. inside measurement, about 16.5 cm. in length and bent at one end at nearly a right angle. A copper wire carrying at one end a smoothed cotton swab is inserted inside the tube. The swab is pulled back well within the tube, and both ends are plugged before sterilization. When ready for use, the two plugs are removed.

The tongue is depressed, and during phonation the tube is passed to the posterior pharyngeal wall, raised, and by pushing the copper wire forward the swab is extended about 6 to 7 mm. After touching thoroughly the mucous membrane, which may be accomplished by turning the swab first to one side and then to the

1. Gordon, M. H.: Medical Research Committee, Special Report Series, No. 3, 1917, p. 19. Hereafter this pamphlet will be referred to merely as "English Report."

2. West, C. E.: Proc. Roy. Soc. Med., Otological Section, 1910-11, **4**, 43.

other, the cotton plug is pulled back within the tube and the whole withdrawn.

The culture plate being ready, the swab is again pushed forward and the mucus deposited on the center of the medium. This material is further spread over the surface with a bent platinum or nichrome wire. The plates should be incubated at once at 37 C. If this is impracticable, they should be enclosed in a box kept warm with hot water until they can be properly incubated. Cooling of the plates and delay in incubation diminishes the number of successful isolations of the meningococcus from the nasopharyngeal secretion and the cerebrospinal fluid.

Cultivation.—The medium employed for cultivation should contain serum constituents or its equivalents. The serum is preferred in the noncoagulated state. The meningococcus does not develop at all in early generations, and often very little in later generations on ordinary nutrient agar medium. Glucose agar to which blood or blood serum or ascitic fluid has been added yields a suitable medium. The blood of man, rabbit or horse may be used; but bullock's blood is unsatisfactory. The serum obtained from sheep's blood is not only suitable and satisfactory, but because of its availability is to be highly recommended. It is employed in the form of Hiss' serum water.

An eminently satisfactory culture medium is made as follows: Lean beef or, because of cheapness, bob veal, is used for preparing the usual meat infusion. Fairchild's or other suitable peptone is added. The reaction is adjusted to 0.4+ phenolphthalein. Dextrose is added to strength of 1 per cent. Sterilization is accomplished in the autoclave.

The serum is obtained from sheep blood collected at the slaughter house. It is mixed, one part, with distilled water, three parts, and the mixture is sterilized by heating in the Arnold sterilizer on three successive days for thirty minutes, or in the autoclave at 15 pounds' pressure for forty minutes. One c.c. of the serum water is added to each 5 c.c. of the melted agar medium previously cooled to 50 C. The slanted tubes contain approximately 5 c.c. and the Petri plates 10 c.c. of the agar medium. The slanted tubes can be kept on hand, provided care is taken to prevent drying of the surface; the plates are made as required.

Vincent and later Olitsky modified this medium by adding litmus. Olitsky employs 2 c.c. of a sterile 10 per cent. litmus solution in distilled water for each plate (10 to 12 c.c.) of the sheep serum agar medium. As the meningococcus ferments dextrose and *Micrococcus catarrhalis* does not, the colonies of the former assume a pink tint, while those of the latter remain blue. In fact, the medium is not as great an improvement over the colorless agar as might be supposed. The meningococcus, as immediately isolated from human secretions, possesses weak power of fermenting glucose; and certain streptococcus colonies take on a pink hue and confuse the plate. However, the colonies of *Micrococcus flavus* present an opaque yellow and greenish appearance readily distinguished.

Horse serum in the proportion of 2 per cent. may be substituted for the sheep serum water. A medium even more favorable for the growth of the meningococcus than the sheep serum agar is prepared by putting into a Petri plate 0.25 c.c. of defibrinated rabbit blood laked in 0.5 c.c. of sterile water. Ten c.c. of the melted agar cooled to 45 C. are added, and the whole is thoroughly mixed. All the mediums described are transparent, which is an advantage. The colonies reach a larger size in the hemoglobin medium and certain meningococci grow there when they multiply little or not at all on the serum plates. The original isolation of the colonies from the nasopharyngeal secretions is however assisted by the promoting action of the nasal secretions on the growth of meningococcus in cultures. In practice the greater simplicity of preparation on a large scale of the sheep serum medium is an obvious advantage, especially for subcultures.

The plates inoculated with the secretions should be incubated at 37 C. for from sixteen to twenty hours (over night). They may then be examined immediately or after being set aside for four to six hours, during which time the colonies of *Micrococcus catarrhalis* continue to grow in size. The latter become opaque and show sharply defined borders. The colonies of the meningococcus are smaller and far more delicate; their outlines fade away into the medium. Since form and texture are so important in the detection of the colony of the meningococcus, acquaintance with them should be obtained in advance by the study of pure cultures obtained as recently as may be possible from the cerebrospinal fluid or nasopharyngeal secretions. The colonies of *Micrococcus flavus* in the young state and before pigment has appeared simulate those of the meningococcus, and may lead to temporary confusion.

Microscopic appearance of the organisms is another guide. The form of the meningococcus is more delicate than that of *Micrococcus catarrhalis* or *flavus*. Moreover, full development and subsequent regression or involution are reached earlier. The degenerated meningococci are strikingly irregular in size and variegated in staining properties. Certain individuals stain deeply, many with little intensity. Once the degeneration changes are learned, they give valuable aid in identification.

The meningococcus, like *Micrococcus catarrhalis* and *flavus*, is gram-negative. Two solutions, Sterling's gentian violet and Gram's iodin are employed for staining. They are prepared as follows:

Sterling's Gentian Violet.—Five gm. of gentian violet are ground in a mortar with 10 c.c. of 95 per cent. alcohol. After practical solution, 2 c.c. of anilin are added, and then 88 c.c. of distilled water. The grinding is continued a short time, and after the mixture is permitted to rest a day or two, it is filtered through paper. It has the merit of staining quickly and intensely and of keeping many months.

Gram's Iodin Solution.—One gm. of iodin and 2 gm. of potassium iodid are rubbed together in a mortar and dissolved in 300 c.c. of distilled water. The filtered solution keeps indefinitely.

The film, air dried and passed through the flame, or preferably fixed in methyl alcohol, is stained as follows: The gentian violet is applied for one-half minute and washed or blotted off. The Gram's solution is applied also for one-half minute, and after washing or blotting away the excess, the slide is immersed in a Coplin jar containing 95 per cent. alcohol, for a few seconds. It is advisable to move it up and down. After washing away the alcohol, the counterstain consisting of aqueous safranin, is put on for from one-half to one minute or longer. It does not overstain. (The safranin stain is made by dissolving water soluble safranin in 95 per cent. alcohol to saturation. Ten c.c. of the alcoholic solution are mixed with 90 c.c. of distilled water. The stain keeps.)

The meningococcus, *Micrococcus catarrhalis* and *flavus*, and certain indefinite micrococci appear red; the pyogenic staphylococci, streptococci and pneumococci appear blue under the microscope.

IDENTIFICATION OF MENINGOCOCCUS

Colonies on the Petri plates, suspected of being meningococcus, are inoculated on the slanted sheep serum agar or other medium and incubated at 37 C. for from sixteen to twenty hours. The resulting cultures are subjected to (*a*) microscopic examination and (*b*) to agglutination; in addition, but not necessarily, (*c*) the fermentative effects on sugar may be ascertained. The final test is that of agglutination, but it is well to bear in mind that the meningococcus ferments glucose and maltose with acid production but not saccharose, while the *Micrococcus catarrhalis* exerts no action on glucose, and a number of more indefinite gram-negative micrococci occurring in the nasopharynx from time to time ferment saccharose.

Agglutination.—For the purpose of the rapid identification of the meningococcus, a polyvalent serum prepared in the horse is employed. Such a serum if actively agglutinating is not impaired when preserved with 0.2 per cent tricresol and kept at refrigerator temperature. Hence stock therapeutic serums may be employed. In every instance the stock serum must have been proved by appropriate tests to be agglutinating against established strains of the meningococcus in dilutions of from 1:200 to, say, 1:2,000.

The test is made by the macroscopic method. The culture on the serum agar slant is washed down with from 1.5 to 3 c.c. of 0.8 per cent. sterile saline solution according to the amount of the growth. The serum dilutions consist of 1:50, 1:100, 1:500, 1:1,000 and 1:2,000 strengths. To each 0.8 c.c. of the latter, 0.2 c.c. of the emulsion of the micrococcus is added. After thorough mixing, the tubes are incubated at 55 C. for sixteen hours (over night). Suitable saline controls of the cultures are carried along. The readings of the tubes are made at once, and the usual signs are employed to designate degree of agglutination. Test tubes 9 by 1 cm. in size are preferred for the test.

The meningococcus does not agglutinate spontaneously in salt solution. A true meningococcus is completely agglutinated (++) in a 1:200 dilution of active polyvalent serum, and usually in higher dilutions than this. Other gram-negative micrococci are either not agglutinated at all, or not in dilutions greater than 1:100. *Micrococcus flavus* sometimes agglutinates in normal serum 1:50 and in polyvalent and monovalent meningococcus serums 1:100 or even greater dilution. It is distinguished from meningococcus by its indiscriminate agglutinability and by its cultural properties. When normal serum is available, a control in 1:50 dilution may advantageously be added to the test series. Any culture which fulfils the cultural and microscopic conditions, and which is agglutinated in 1:200 dilution by the polyvalent antimeningococcic serum, is accepted provisionally as meningococcus, and the person from whose nasopharynx it was obtained is regarded as a carrier.

The number of colonies possessing the characters of the meningococcus, which develop from the nasopharynx of different persons, fluctuates widely. The number may be so large as to yield what is virtually a pure culture on the plates, or it may be so small as to demand skill and much patience for their detection. The usual condition falls between these extremes. While precise information on this point is lacking, it is to be presumed that the larger the number of meningococci thrown off with the secretions, the greater the danger of contamination of others. The rate at which the carriers clear up or become meningococcus-free is determined also, in part, by the degree of contamination. When few colonies can be cultivated from the nasopharynx, the tendency is for clearing to take place more quickly than when an abundant growth is obtained.

TYPES OF MENINGOCOCCUS

The meningococcus, like several other micro-organisms, and notably the pneumococcus and dysentery bacillus, is not a consistent species, but consists of several closely related varieties of types. The cultural features of the several members are identical; they are distinguished by their immunologic properties. The point is an important one, since on its recognition depends, in large measure, the successful application of the specific serum therapy.

The nomenclature employed to designate the varieties or types varies in different countries. That there is no general agreement is regrettable. This matter is not, however, one that can be adjusted readily, since it follows in part from the occurrence of intermediates between the more stable types.

Until Dopter's[3] studies published in 1909, no distinction was made between various cultures of the meningococcus. He was the first to discover that the prevailing type (called normal or regular) of the microorganism was distinguishable immunologically from a second type called by him para, which existed not infrequently in cases of epidemic meningitis occurring in Paris. These findings have been generally confirmed and have exerted a marked influence on the prophylaxis and specific serum therapy of the disease. An immune serum prepared with the normal cultures contains agglutinin and other antibodies for its own type and little for the other type, and vice versa. It is possible to absorb this common agglutinin for the two types, leaving the quantity of specific agglutinin unaffected.

Still closer analysis has, however, shown that besides the normal and para types, certain intermediates occur approximating one or the other in immunologic properties. English[4] bacteriologists have, indeed, set up a classification which seeks to range all the cultures into four classes or types, which they designate I, II, III and IV. This differentiation is based on the method of elective absorption of agglutinin just mentioned, and was carried out with cultures derived from the cerebrospinal fluid of cases of epidemic meningitis. The Type I of the English classification appears to correspond to the para, and Type II to the normal or regular meningococcus. Types III and IV appear to conform to the more common intermediates.

The conclusion from the immunologic studies, which have now been carried out abroad and in the United States with painstaking care, is to the effect that two fixed types and certain less fixed ones of the meningococcus exist in nature, and representatives of any of them are capable of infecting the cerebrospinal meninges and of inducing epidemic meningitis; and to combat the disease thus caused, a polyvalent antimeningo-

3. Dopter, C.: Compt. rend. Soc. de Biol., 1909, **67**, 74; Wollstein, M.: Jour. Exper. Med., 1914, **20**, 201.
4. Ellis, A. W. M.: Brit. Med. Jour., 1915, **2**, 881; Gordon, M. H.: English Report, p. 10.

coccic serum in the true sense must be employed. This antiserum must, to be effective, carry adequate antibodies for the fixed types and for as many of the intermediates as may be available as well.

The types of meningococcus which occur in the cerebrospinal fluid must correspond with those existing in the nasopharynx, if the statement already made, that every case of epidemic meningitis arises from a carrier, be true. The recent English studies are conclusive on this point, and establish this relationship. Moreover, certain as yet unpublished studies made in this country point to the same conclusion. Furthermore, in that form of contamination by a carrier which gives rise to many other carriers, the type of meningococcus present tends to be identical in all. The occupation of the mucous membrane by a given variety of meningococcus seems to make the implantation of a second variety infrequent. The English studies, which are the only ones thus far which cover this point, point to this inference.[5]

The identification of the meningococcus by the agglutination test has had the effect of excluding, as meningococcus, certain micrococci present in the nasopharynx which on cultural, microscopic and staining properties, would have been classed with that microorganism. In this way the number of supposed carriers has been reduced about one-third. Even so, the number of carriers proved by the agglutination test still exceeds greatly the cases of meningitis arising, and may be four to five times as numerous as the latter.

PREPARATION OF POLYVALENT AND MONOVALENT ANTIMENINGOCOCCIC SERUM

Polyvalent Serum.—The therapeutic polyvalent serum which can also be used for identifying the meningococcus is prepared in the horse. To produce a true polyvalent serum, representative cultures of the fixed types and available intermediates are used for inoculation. The cultures employed for injection are first tested against monovalent serums to insure that normal and para types are selected. By means of type monovalent serums, intermediates can also be selected; and as the immunization of the horses proceeds, they are added to the material injected until the agglutinins developed adequately represent all the cultures employed. As the immunization extends over many months, while the serum is being collected and used therapeutically, any further deviating cultures which come to hand are added to the stock employed for inoculation, replacing, for the time, normal or para strains for which the agglutinins are already sufficiently developed.

Experience with the specific serum treatment of epidemic meningitis has emphasized the importance of this general method of procedure. Hence to reduce the preparation of the polyvalent serum to routine is to endanger the efficacy of the product. The production of a true polyvalent serum of high titer demands intelligent operation and constant vigilance. Already sad and costly disappointments have followed the employment of commercial products believed to be trustworthy. Any one intelligently engaged in the preparation of the serum must keep in constant touch with the clinicians employing it in practice, in order that he may investigate the causes of failure in certain obstinate cases of epidemic meningitis. This failure may be due to one of several causes, and may be attributable to the infecting meningococcus being unrepresented among the antibodies, as indicated by agglutination, in the serum. When this happens, the particular culture is used in the subsequent injections of meningococcus into the horses in order to develop the antibodies peculiar to it.

This brief sketch should suffice to indicate the far greater care demanded to prepare an efficient antimeningococcic serum than, for example, to produce antidiphtheria or antitetanus serum, which relatively are simple products. There is still another point emphasized by Amoss, namely, that a test bleeding of the horses should precede the regular bleedings, in order that the balance of immune bodies as indicated by the agglutinin content for type cultures may be determined. The titer adopted by us is that of agglutination in 1 : 1,500 to 1 : 2,000 dilution for the main normal and para types and for the several intermediate varieties used for inoculation. It is desirable particularly to warn against titration of the serum with one or two cultures of meningococcus which happen to be highly agglutinable.

The commercial standardization of the antimeningococcic serum is highly desirable—indeed, is demanded in the interests of the public welfare. The impression may have been gained that this is not readily accomplished because of the variability of the meningococcus cultures. But what must be kept in mind is that three or four types represent the great preponderance of meningococci causing epidemic meningitis, and it is entirely feasible to standardize the serum with reference to those types. This action would be a great step forward, and would in no wise prevent particular persons or institutions from preparing serum representing the intermediate varieties as well.

The formulation of standard requirements should contain also a definition of the ordinary or gross physical properties of the serum. For example, the serum should be uncolored by hemoglobin or its secondary compounds. This is a matter of first-rate importance. The intraspinal injection of serum carrying considerable quantities of those compounds increases the severity of the reaction and may lead to serious accidents.

Finally, there might even be recommendation as to the chemical preservative to be employed. The experiences of many years now may be drawn on to cover this point. The preservative to be preferred would appear to be tricresol, of which 0.15 to 0.2 per cent. is an adequate amount to prevent bacterial contamination of a serum collected and bottled in a strictly sterile manner. Chloroform has been substituted for tricresol or phenol. It is an efficient antiseptic; but it is objectionable because of the pain, sometimes very severe, which attends the intraspinal injection of the chloroformed serum. Tricresol, on the other hand, exerts something of an analgesic effect.

Monovalent Serum.—Since the polyvalent serum is made on a large scale primarily for therapeutic purposes, more precise details of its preparation are not in place here. The monovalent serums, on the other hand, are prepared for use in the identification of the types and varieties of meningococcus and for the purpose of correlating cultures obtained from the nasopharynx with those present in the cerebrospinal fluid. They are best made in the rabbit, and can be prepared in any bacteriologic laboratory.

Young rabbits are chosen, as they yield serum of higher titer. Male rabbits weighing from 1,500 to 1,800 gm. are to be preferred, but females will suffice,

5. Flack, M.: English Report, p. 60.

and animals somewhat lighter in weight may also be used. There is a choice of method for immunizing the rabbits. The two representative ones will be described.

Amoss proceeds as follows: The meningococcus to be inoculated is transplanted to slanted plain glucose agar. After sixteen hours' incubation, the growth is suspended in 10 c.c. of 0.8 per cent. salt solution. Of the suspension, 0.1 c.c., or one one-hundredth of the culture, is diluted to 2 c.c. with the saline and injected intravenously. The same dose and procedure are repeated with a fresh culture on the second day, and the same procedure with a dose of one eightieth of a culture on the third day. After an interval of five days, one eightieth of a culture, followed the next day by one fiftieth and the third day by one twenty-fifth are injected. Two days later the animal is exsanguinated and the serum collected.

The English method[6] employed in the army consists in inoculating stock emulsions of meningococcus killed by heat and preserved with phenol. The emulsions are said to bear storage for several months, and besides yielding satisfactory agglutinating serums, to be adapted to agglutination and absorption tests.

The emulsion is prepared from growths of the meningococcus on Petri plates which have been incubated for twenty-four hours at 37 C. About six plates are used for a batch. Over each plate a few cubic centimeters of 0.8 per cent. sterile salt solution are poured, and the growth is detached from the surface and distributed in the saline. The emulsions are examined microscopically to insure purity, and then mixed and heated to 65 C. for half an hour to prevent autolysis. After the heating, which appears to help the meningococcus to emulsify, the emulsion is standardized: 0.1 c.c. is placed in a special tube kept for the purpose, and clear tap water is then added from a 5 c.c. pipet graduated in 0.1 c.c. divisions, until the contents of the tube are just perceptibly turbid to the naked eye as compared with a control of pure tap water. The "end-point" is taken to represent a content approximately 100 million of the meningococcus per cubic centimeter. The amount of dilution needed to reduce 0.1 c.c. of the emulsion to the end-point having been determined and the bulk of the emulsion being known, it is quite simple to so dilute the emulsion with saline that it contains 2,000 million meningococci per cubic centimeter. Five-tenths per cent. phenol is added as a preservative. The emulsion so prepared and standardized suffices to inject rabbits and to perform agglutination and absorption tests. For the last, an emulsion of double the strength is preferred. The emulsion keeps for several months at refrigerator temperature.

For preparing agglutinating serums, the procedure is as follows: The rabbits receive intravenously 1,000 of the killed and emulsified meningococci, and an hour later a second injection of 500 million. On the sixth day afterward, 3,000 million are injected. A test bleeding is made two days later. If the agglutination titer is sufficiently high (from 1:400 to 1:800 by the macroscopic method), the animal is bled to death on the ninth day. The clear serum is separated and stored in the cold, preferably without preservative.

Whatever the method employed, some of the rabbits will not survive the immunization period. Hence it is necessary to carry out the inoculation in series of, say, two or three animals for each culture type or variety injected.

6. Hine, T. G. M.: English Report, p. 99.

NUMBER, DURATION AND TREATMENT OF CARRIERS

Number.—Meningococcus carriers are distinguished according as they have arisen from a known previous carrier or from a case of epidemic meningitis or insidiously without such known association. The one is termed "contact" and the other "noncontact" carriage. The distinction is not entirely academic. For instance, if a bacteriologic examination be made of the nasopharynx of a general population without reference to particular cases of meningitis or carriers of meningococcus which may have arisen, the percentage of contaminated persons detected will be smaller than among the immediate persons in contact with the known cases or carriers.

The older figures from various sources indicate that during the prevalence in some degree of epidemic meningitis, about 2 per cent. of carriers exist among groups of persons representing the general community. In arriving at this result, cultural properties, not agglutination reaction, were employed to identify the meningococcus, and yet the figures have been essentially confirmed by the later and more precise observations.

The recent English studies extend our knowledge in important ways. Flack,[7] for example, found among 275 noncontacts, who were swabbed, 2.18 per cent. of carriers; among 832 men from an epidemic area, 4.39 per cent. of carriers, and among 1,629 actual contacts, 8.53 per cent. of carriers. All these were confirmed by agglutination. The larger number of actual contacts was made up of the following groups: regimental, who gave 10.98 per cent.; hospital, who gave 7.18 per cent., and outside commands (hospital and other contacts), with 5.53 per cent. of carriers. These figures illustrate the determining factor of close association.

The question will arise whether, for example, it is feasible to examine bacteriologically large numbers, thousands say, of exposed persons in a military camp without excessive disturbance of the usual routine. Theoretically, the task is one not at all beyond relatively a simple laboratory organization. With sufficient stocks of culture mediums and trained technical help, three or four bacteriologists, skilled in the detection of meningococcus, could complete such an undertaking in a comparatively short time and without serious disorganization of camp life. An instance of the swabbing of 10,000 men is recorded in the English report.[8] This large number included not only immediate contacts, but also a large garrison which, so far as ascertained, had not been in direct contact with actual cases of meningitis. The number of persons carrying micro-organisms resembling meningococcus was 410, but subsequent agglutination tests eliminated about one third of these, who were immediately set free.

Duration.—The persistence of the carrier state has been especially studied by Flack, whose figures are based on 185 examples, of which 124 had and sixty-one had not been in known contact with a case of meningitis or another carrier. The average duration among the former was 4.65, among the latter, 3.68 weeks. Within the first two week period, the percentage becoming clear was 20, within the first four week period 52, while about 5 per cent. endured beyond the twelve week period. The weather conditions seem to play a part. It was noted that following

7. Flack, M.: English Report, p. 52 et seq.
8. Tulloch, W. J.: English Report, p. 70.

a week of sunshine, with little rain, the clearing up process was accelerated.

In rare instances, the duration continued for long periods. Examples of carriage for six, twelve and fifteen months with, however, eventual disappearance of the meningococcus are recorded. In the great majority of carriers, the nasopharyngeal mucosa is normal. When inflammatory conditions of the mucosa and tonsils exist, they would appear to be accidental. On the other hand, carriers who suffer from tonsillitis and catarrhal inflammations of the nasopharynx tend to lose the meningococcus more slowly than normal persons.

(To be continued)

Therapeutics

ACUTE DIARRHEA IN INFANTS

It is not our purpose to discuss this subject elaborately, but merely to recall a few therapeutic suggestions.

1. With beginning abdominal disturbance we must consider, in infants, typhoid fever, dysentery, appendicitis, and infection of the kidneys, to say nothing of more serious conditions, as obstruction. During a diarrhea we must watch for symptoms of acidemia, and for meningeal complications.

2. Eruptions that may be present may be due to food poisoning, other protein poisoning, or to drugs.

3. We should seek for sources of focal infection, perhaps in the tonsils or in the ear, or perhaps a serious bronchitis or other lung condition. It should be recognized that streptococcic focal infections may cause diarrhea.

4. The child should always be kept in the fresh air, and outdoors, in the shade, if the weather is hot. If possible, a speedy removal to the seashore or to the country is advisable. This therapeutic measure should not wait until the child is hopelessly ill.

5. Castor oil should be given.

6. Food should be withheld.

7. Plenty of water should be given. If the child cannot retain water in the stomach, after a colon wash, it may be retained in the colon. If water is continually lost by the body, and cannot be retained in the stomach or colon, hypodermoclysis is advisable. Many a diarrheal patient dies from lack of water.

8. In twenty-four hours (sooner if the patient is very weak) lactose, in from 3 to 5 per cent. solution, in water, should be given.

9. If the patient is acidemic, starch water and sodium bicarbonate should be given in small, frequent doses. Thin oatmeal gruel may be given.

10. If there are frequent small stools, with considerable tenesmus and pain, the lower bowel should be washed out with 0.7 per cent. sodium chlorid solution once or twice daily. This should be done very gently. If it causes prostration, it should be stopped.

11. While these treatments are going on, the stools should be examined for bacteria, to ascertain what pathogenic germs we must combat. If the gas bacillus is found, Bulgaria bacilli tablets may be crushed and administered in sugar and water, or in whatever nutriment is being given.

12. If the stools are fetid, and especially if there is a tendency toward incomplete evacuation of the bowels, small doses of yeast may be given, in water, as one twentieth of an ordinary yeast cake, once a day.

13. Phenyl salicylate, in 0.03 gm. doses for a child 1 year old, may be given every three hours for a day or two, and then every six hours. Older children should receive a larger dose.

14. If there is much irritation of the stomach or upper intestine, milk of bismuth may be given. It should not be given too long, and is of no value given by the mouth in colitis.

15. If the child is hot, it should be sponged with tepid water and kept cool. If it is cold, it should be kept warm with dry heat. So-called antipyretics should not be given. A good working rule is to keep the abdomen warm, and the rest of the body cool.

16. If stimulation is required, very small doses of atropin, or very small doses of strychnin, or both, may be given.

17. If the child becomes constipated, and the bowel condition is troublesome, another dose of castor oil may be given.

18. The mouth should be kept clean, but all measures should be gentle. The usual antiseptic precautions should be used for all nose and mouth secretions, for the diapers, and for cleansing the clothing and bed linen.

19. It is well to keep petrolatum spread over the anus and buttocks. This prevents irritation from the excretions, and is not conducive to germ growth.

20. As soon as advisable, the food should be increased by giving malted foods or malted gruels, and later by pasteurized milk, but the diet should be kept low until the abnormal temperature ceases and the stools are less frequent and contain no blood.

21. A gradual return should be made to the regular milk or mixed diet of the child.

22. Occasionally, when all measures seem to fail, if the child is a bottle-fed infant, a wetnurse may be a life saver. If the child is a nursing child, the mother's milk may be at fault, and all other possible sources of infection should be sought.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

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Actions and Uses.—Gastron is claimed to exhibit the characteristic enzymic properties of gastric secretion. It is designed to present in a stable form a complete gastric gland extract for use in disorders of gastric functions.

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SATURDAY, AUGUST 25, 1917

THE CITY MILK PROBLEM

The enormous improvement effected in the quality of the milk supply in the last two decades has been highly satisfactory from the sanitary point of view, but certain developments associated with this improvement have been more or less disquieting. The principal cause of complaint is the great increase in the cost of milk to the consumer. Part of this increase is perhaps justified by the expense of throwing sanitary safeguards around the supply, but there is question whether the rise in price can be altogether explained in this way. The truth seems to be that the milk business in many cities has become practically a monopoly, that the concentration of distribution in the hands of a few large companies has been of marked disadvantage to the producers and in some respects to the consumers, and that the price paid for distribution has become disproportionately high. The consumer in many cities pays double or more than double the amount per quart received by the producer from 20 to 50 miles away. It cannot be gainsaid that any unnecessary increase in the cost of milk to the city dweller entails grave hygienic as well as economic disadvantages.

In point of fact, it is impossible to separate sanitary from economic interests. The delivery of wholesome milk as cheaply as possible is manifestly what the community has a right to demand. The entire milk supply should be guarded at its source and throughout the process of distribution. Pasteurization should be extensively employed. While unnecessary elaboration of detail should be avoided, legitimate, carefully thought out measures for protecting the quality of the supply will be cheerfully supported by the majority of intelligent citizens. But objection is growing to any addition to the cost of milk based on advertising and other wasteful competitive methods, on duplication of milk routes, on high profits obtained by distribution companies, and on all methods of collection and transportation not expressly justified on sanitary grounds.

The community has taken over without material opposition the task of sanitary inspection and supervision of the milk business. There are many who believe it should also assume the work of prompt transportation, of uniform and centralized pasteurization, and of economically efficient delivery. No one cognizant of the facts can doubt that, in the present system of bringing milk from the producer to the consumer, the cost of milk to the latter has been increased beyond what is fair and reasonable. Privately owned and managed plants for distributing water in modern cities have almost disappeared; milk supply is today perhaps second only to water supply in its importance for the public health. There are obvious difficulties in the way of the complete municipal control of the milk distributing business, but in some respects they are not so great as those encountered in the waterworks management.

It may be taken for granted that the usual objections will be raised against the assumption by the public of functions heretofore mainly in the hands of private individuals; but doctrinaire objections are not especially daunting to the much exploited city dweller. If the public control is more satisfactory to consumers, all things considered, than private control, there is little else to be said about it. It would be of great service if an experiment in municipal milk handling should be made by several favorably situated communities. Whether this proved a success or a failure, we should at least obtain some data on which to base opinions and perhaps further action. Certainly the present situation with respect to the cost of milk distribution to the consumer is not without further study to be accepted as the best in the best of possible worlds.

THE NEWER CONCEPTION OF ACIDOSIS

Those who have become acquainted with the word "acidosis" since its introduction into scientific medical literature can scarcely help experiencing some confusion of ideas when they attempt to interpret the meaning of this now widely current term. Naunyn first employed the word to denote that perversion of metabolism in which betahydroxybutyric acid is formed. Subsequently "acidosis" was the name given to other conditions in which acids of any type tend to upset the acid-base equilibrium of the body. The production of betahydroxybutyric acid is an incident in the disordered metabolic changes that lead to an output of ketone substances by the organism. This abnormality is now known to have a significance of its own, namely, in the indication that fatty acids derived either from fats or from amino-acids are being incompletely oxidized; and since this may exist without any conspicuous acid intoxication, it seems advisable to reserve a specific designation for this perverted metabolism of fatty acids. It has thus repeatedly been proposed to indicate the excretion of ketone bodies as "ketonuria," while Allen[1] has sug-

1. Allen, F. M.: Am. Jour. Med. Sc., 1917, **153**, 313.

gested for the metabolic condition which gives rise to them the concise and specific term "ketosis."

What, then, is the expression "acidosis" to be understood to mean if it shall no longer be applied specifically to the condition in which acetone or ketone bodies are formed? It has been applied somewhat vaguely to "acid intoxication"; and more recently with the advent of the newer physicochemical conceptions of acidity, acidosis has been identified with an actual increase in the hydrogen ion concentration of the blood. As a matter of fact, however, it has been clearly established that, owing to the remarkable regulatory devices of the organism, the reaction of the blood not only is constant under normal conditions but may even be kept so under pathologic stress involving great lowering of the alkali reserve. But whether the cause of the phenomenon described as acidosis is the production of acid, or the ingestion of acid, or the lack of alkali in the food; whether it is due to a failure to eliminate acid or to a failure to produce and eliminate the neutralizing ammonia — in any event it must always involve a depletion of the body's alkali reserves. Van Slyke[2] and his collaborators at the Hospital of the Rockefeller Institute, New York, have clearly pointed out that free carbon dioxid is present in the body fluids in such concentration that it automatically converts into bicarbonates all bases not bound by other acids. The bicarbonate therefore represents the excess of base which is left after all the nonvolatile acids have been neutralized and is available for the immediate neutralization of further acids. In this sense, says Van Slyke, it constitutes the alkaline reserve of the body. The bicarbonate concentration of the blood is representative of that of the body fluids in general, and is normally maintained at a definite level. Entrance of free acids reduces it to an extent proportional to the amount of the invading acid.

L. J. Henderson of Harvard University has been preeminently responsible for the acceptance of the blood bicarbonate as a criterion of the acid-base balance of the body. He has lately remarked in the Samuel D. Gross lecture[3] for 1916 that we come nearest to certainty if we say that acidosis must involve a depletion of the body's alkali reserves, and specifically a depletion of the bicarbonate of the blood. So long as this has not taken place, he adds, the pathologic condition cannot amount to much, so far as the acid-base equilibrium is concerned; when this defect is established, the whole chain of causation, involving breathing, oxidation, nitrogen metabolism, renal activity, etc., has been set in motion. As a practical maxim Henderson therefore describes acidosis as a state of diminished bicarbonate of the blood.

Van Slyke and Cullen[2] have insisted that since the normal concentration of the blood bicarbonate is so definite as to constitute a physiologic constant, the limits of variations being similar in magnitude to those of the pulse rate, we can reduce the term "acidosis" to as definite a meaning as "fever" or "tachycardia." Heretofore acidosis has been detected or measured in a variety of ways. The blood plasma has been titrated directly; the carbon dioxid content or capacity of the blood has been determined; the hydrogen ion concentration has been ascertained; the carbon dioxid content of the alveolar air has been measured; the urine has been examined for evidences of acid excretion. Fortunately, Van Slyke and Cullen[2] have devised a simple technic by means of which the capacity of the plasma to combine with carbonic acid (formed by carbon dioxid) under definite tension is determined as a measure of the alkali in excess of acids other than carbonic. It seems likely that this will find application as a clinical procedure, since it involves merely the withdrawal of a sample of blood so far as the patient is concerned, and it is free from psychic and other factors that affect the now widely tested estimation of alveolar carbon dioxid tension as an indication of the severity or progress of an acidosis. It is stated that the results obtained with a given plasma are reproducible to within 1 per cent. of carbon dioxid, 65 volume per cent. being the average normal value for man. In acidosis the carbon dioxid capacity of the plasma falls so far below the normal that the method is a most sensitive indicator of this condition and its severity.

There is, however, another simple though crude physiologic test of acidosis which involves little skill in its execution. It consists in ascertaining the amount of soda, administered by the mouth, that is required to make the urine alkaline. For normal persons, the addition of 5 or 10 gm. to the food will suffice; but an organism whose store has been depleted will retain alkali, so that if more than 10 gm. of soda are required, experience justifies the conclusion that a state of acidosis exists. If, as Henderson thinks, acidosis is probably more common than fever, the test for it should always be made. The alkali can be administered for therapeutic ends too. The use of soda does not remove the cause of the acidosis, but it does protect the alkali reserve, pending the discovery of the etiologic defects. Accordingly, Henderson has offered the following precept: The duty of the physician is to discover whether the quantity of sodium bicarbonate in the blood is diminished, to restore that quantity to normal, and to hold it there. But while restoring it, he must never increase the quantity above normal. Thus founding practice on exact knowledge, on theory fully confirmed, and on an understanding, however imperfect, of the organization of all the mani-

2. Van Slyke, D. D., and Cullen, G. E.: Studies of Acidosis, I, The Bicarbonate Concentration of the Blood Plasma, Its Significance, and Its Determination as a Measure of Acidosis, Jour. Biol. Chem., 1917, **30**, 289.

3. Henderson, L. J.: Acidosis, Science, July 27, 1917, p. 73. This is a singularly illuminating discussion of the problems here under consideration. See also the Studies of acidosis by Van Slyke, D.D., et al., in the Journal of Biological Chemistry, 1917, **30**, 289 ff., from which many of the features discussed above are taken.

fold processes of metabolism, he may hope sometimes to block a cycle of changes leading to final disintegration, and perhaps more often to alleviate discomfort and pain.

CREATIN AND CREATININ IN BLOOD

In health the urine of human adults rarely contains any noteworthy amount of creatin despite the constant presence of the closely related substance creatinin. In fasting and certain diseases, particularly such as are attended with more or less inanition, creatin may make its appearance in the secretion from the kidney. It is found in the urine of women after postpartum resolution of the uterus; and children commonly excrete creatin along with creatinin until the middle years of childhood.

Underhill[1] has lately pointed out, in an experimental study on certain species, that a marked condition of acidosis, as measured by the hydrogen ion concentration of the urine, is always associated with the appearance of creatin in the rabbit. This may be brought about by feeding acid-forming foods. On the other hand, if a base-producing food, such as carrots, is fed to rabbits with creatinuria, this symptom rapidly disappears as the urine becomes alkaline. Lack of carbohydrate in the diet has been believed to lead to an output of creatin in the urine. Underhill has concluded, however, that it may appear even when adequate carbohydrate is supplied. He believes that creatinuria is not necessarily related to carbohydrate deficiency in the body. It would appear to be associated with a condition of acidosis which usually accompanies those states of metabolism in which carbohydrate deficiency is especially noticeable. If this interrelationship is established, creatin in the urine may prove to be an index of a condition of acidosis in the organism.

Wilson and Plass[2] of the Johns Hopkins Hospital have carried the analysis a step farther back in the metabolism by reinvestigating the relationship between creatin and creatinin in the blood plasma and in the urine. They have found little or no creatin in adult human plasma. This observation offers an explanation for the fact that creatin is seldom found in the urine of normal men, and in small and variable amounts in the urine of normal women. On the other hand, infants, who are known to eliminate relatively large quantities of creatin, have in their plasma practically as much creatin as creatinin.

It has further been observed that the plasmas of other species, such as the pig and the hen, which commonly excrete creatin in the urine, contain larger quantities of this nitrogenous compound. This harmonizes well with the view that a characteristic relationship appears to exist between the concentration of creatin in the plasma and its elimination in the urine. Wilson and Plass point out that the older observations led to the anomalous conclusion that creatin is present in considerable quantities in the blood of man, while little if any normally escapes into the urine; but that under certain slightly abnormal conditions, it may be eliminated in considerable quantities. Moreover, the variations in the concentration of creatin in the bloods of different animals showed no relationship to the relative amounts of creatin excreted. The new hypothesis makes the output of creatin and creatinin dependent, as are certain other urinary constituents, on their presence and concentration in the plasma. The concentrations of creatin in the plasma and corpuscles of man appear to be different and must henceforth be studied independently.

In this connection it appears worth while, in view of the increasing attention now being devoted to the chemical analysis of human blood, to call attention to the conflicting views regarding its content of creatinin. The normal values have usually been put from 1 to 2 mg., while Gettler, of the Department of Pathology at Bellevue Hospital, New York, contends that these figures are much too high. A critical study of the current methods of analysis leads him to adopt a range of from 0.1 to 0.5 mg. in 100 c.c. of blood as normal values. Such differences reported by prominent investigators bring the quantitative aspects of the blood-creatinin question into prominence anew.

1. Underhill, F. P.: Studies in Creatine Metabolism, I, Possible Interrelations Between Acidosis and Creatine Elimination, Jour. Biol. Chem., 1916, **27**, 127.
2. Wilson, D. W., and Plass, E. D.: Creatine and Creatinine in Whole Blood and Plasma, Jour. Biol. Chem., 1917, **29**, 413.

VACCINE TREATMENT AGAIN

In these columns we have called attention repeatedly to the *post hoc ergo propter hoc* fallacy in claims advanced in favor of the treatment of various infectious conditions with bacterial vaccines. The majority of the acute and subacute conditions are curable spontaneously without any such specific means as vaccines have been thought to be, and especially when the general condition of the patient receives good attention and when, as in the case of strictly local infections, the proper conditions favorable for healing are secured by surgical measures. In any event, the more chronic infectious processes subjected to vaccine treatment almost without exception present variations in their course; periods of improvement succeed periods of exacerbation.

On account of these facts it obviously is utterly impossible to judge of the effects of any given treatment of such diseases as we now have in mind without the most careful comparative observations in treated and untreated cases of such nature and under such conditions that the results obtained in the two groups are comparable. As pointed out by Leake[1] in his article on bacterial vaccine therapy, whenever this

1. Leake, J. P.: Bacterial Vaccine Therapy, THE JOURNAL A. M. A., this issue, p. 631.

kind of study has been made so far, the results appear to be about the same in the two groups, the test groups and the control group. This is true not only of whooping cough and typhoid fever, but also of that intractable infection, gonorrheal vulvovaginitis in young girls, and, we believe, in pyorrhea alveolaris, too. As for the strikingly favorable results in individual instances reported by vaccine enthusiasts, and repeated over and over again in advertisements, they are all matched, every one of them, by equally brilliant results in cases not treated with vaccine and of frequent occurrence everywhere. In other words, the present situation as to vaccine treatment illustrates again that uncontrolled clinical reports have no value as evidence as to the curative value of a treatment in spontaneously variable and self-curable diseases, and as Leake says, the case in general for bacterial vaccine therapy is not proved.

The history of commercial vaccines is not creditable to many medical and scientific journals. At present the *Journal of Bacteriology*, the official organ of the Society of American Bacteriologists, managed and edited by a committee of distinguished bacteriologists (distinguished, however, not for high standards as to ethical advertising in scientific fields), carries a full page display advertisement which reads:

HAY-FEVER

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Pollen irritation and breathing of the hot dust-laden atmosphere favor the development of pyogenic bacteria in the respiratory tract which then become a factor of the disease.

Experience shows that the immunizing influence of an appropriate bacterin will either cure the disease or so modify it that it causes but little distress. Use ———'s No. 40. Write for literature.

Where is the evidence of the cure? Of the modification of the disease? As no conscientious person wishes to be the means of spreading what is false, let us take to heart and profit by what Bacon says: "If false facts in nature be once set on foot, what through neglect of examination, the countenance of antiquity, and the use made of them in discourse, they are scarce ever retracted."

Menthol from Japan.—Since the beginning of the war the United States has become the largest purchaser of menthol from Japan. In 1916 the total export amounted to 515,277 pounds, valued at $1,201,698. The duty on menthol in the United States is 50 cents a pound. The price has varied from $2 to $2.50 a pound during the past five years. Recent improvements in the process of manufacture have kept the price at a reasonable figure even during the war. It is said that 85 per cent. of the peppermint from which the menthol is made is grown in the Hokkaido district (*Commerce Reports*, Aug. 7, 1917), where the preliminary steps in its manufacture are carried out by the peppermint farmers themselves with stills of simple design. The crude product is sent to Kobe and Yokohama factories where the menthol is produced and the residual oil further purified to the standard requirements for peppermint oil.

Current Comment

MEDICAL STUDENTS AND THE DRAFT

We are publishing, for the third time, facts collected from medical students in regard to their relationship to the draft, and restate how the facts were obtained. In order to secure the information, a double postal card was sent to every medical student whose address we had. These addresses were available as part of the data obtained each year by the Council on Medical Education. We had 8,600 such addresses. The postal card called for the name, age, college and class in which the student was enrolled, his red serial number, and the numerical order of call. It also called for information as to whether or not the individual was in the first call; whether he considered himself exempt; and if so, for what reason? To those schools whose students' addresses we did not have, post cards were sent in packages with a letter urging the college to place them in the hands of the students to be mailed to us at the earliest opportunity. As replies were received, the cards were divided into seven groups, according to whether the students were in the first, second or later call; were below or above the draft age; were exempt on account of being aliens, or had previously enlisted. The cards in each group were kept in alphabetical order, so that all duplications were avoided. At present replies have been received from 6,777 students. Of these, 108 have already enlisted; 42 are aliens; 659 are under and 146 over the draft age, a total of 955, leaving 5,822 (85.9 per cent.) otherwise eligible for the draft. There are 1,666 (28.4 per cent) in the first call; 1,157 (19.7 per cent.) in the second call, and 2,999 (51.9 per cent.)

Class	Total Replies	Total to be Drafted		First Call		Second Call		Later Calls		Age Exempt		Aliens	Enlisted
		No.	%	No.	%	No.	%	No.	%	Under	Over		
Freshmen	2,265	1,785	78.8	467	26.2	325	18.2	993	55.8	387	33	17	43
Sophomores	2,165	1,900	87.8	498	26.2	397	20.9	1,005	52.9	176	49	14	26
Juniors	1,689	1,568	92.8	477	30.2	322	20.6	768	48.9	44	44	9	24
Seniors	242	227	93.7	84	37.0	56	24.7	87	38.3	5	7	2	1
Not stated	416	342	82.2	140	40.9	56	16.4	146	42.7	47	13	..	14
Totals	6,777	5,822		1,666		1,157		2,999		659	146	42	108
Percentages	100	85.9		28.4		19.7		51.9		9.7	2.2	0.6	1.6

in the third and later calls. Of the 1,666 who are in the first call, 1,052 stated positively that they were so included, while 614 did not know, but were so included through estimation from the key list giving the numerical order of the call. All the numbers coming below 2,250 were estimated as being in the first call; those between 2,250 and 4,500 in the second call and those above 4,500 in the third and later calls. These numbers were arbitrarily selected and it now appears that 2,250 was not sufficiently high to cover all in the first call. As stated previously, there were 13,764 medical students enrolled in our medical colleges during the session of 1916-17. Of these, 3,379 were recently graduated, leaving 10,385 to be regarded as medical students. Of these, 4,107 were freshmen; 3,117 sophomores; 2,866 juniors and 295 seniors who were not graduated. On the basis of the replies already received, 8,983 students, or 86.5 per cent. of all,

including aliens, have registered and 1,402 have not registered, either because of previous enlistment or because they were under or over the draft age. Continuing our calculation on the basis of the actual returns, we estimate that 2,551 (28.4 per cent.) will be included in the first call; 1,770 (19.7 per cent.) in the second call, and 4,662 (51.9 per cent.) in the third or later calls. Aside from those mentioned in the table exempted because of alien citizenship, no reference is made to exemptions.

MEDICAL STUDENTS AND CONSCRIPTION—OUR FIGURES QUESTIONED

Two weeks ago we published the analysis of the data obtained from medical students regarding their relation to the draft: age, total number registered, number to be called on each call, etc. The figures published were based on information received directly from the students themselves. The Provost-Marshal, General Crowder, both in letters and in the public press, has stated that these figures "are erroneous and are on their face impossible to be true." General Crowder is also quoted as saying:

"Out of 10,000,000 persons of draftable age, the present call extends only to 700,000, or one fourteenth of the total number registered. Therefore, it is only one fourteenth, or about that fraction, of medical students that can be taken on the present draft."

It may be true that one fourteenth of the total number of all persons registered will be drafted and placed in the National Army on this first call. But how many of the total number registered will it be necessary to examine to secure this one fourteenth — the 700,000 for the first call? General Crowder says that 60 per cent. of those called will be exempted. If this is true, then it will require 1,750,000 of those registered to supply the 700,000; that is, it will take 18 per cent. or nearly one fifth of the total number registered to supply the first call, using General Crowder's figures.[1] Let us apply these facts to the medical student problem. Our estimate was that 85.5 per cent. of medical students (8,879) were subject to draft; that is, were within the draft age. Eighteen per cent. of the total number of medical students registered is 1,598; this number would be subject to the first call. General Crowder, however, would have us deduct 60 per cent. of this number for exemption. But the 60 per cent. exemptions is based on the total registration; it applies to and includes all classes of the male population between 21 and 31 years of age: the lame, the halt, the blind, prisoners, insane, those who are engaged in occupations necessary to the conduct of the war—every male person in the United States between 21 and 31 years of age. Is it not fallacious to apply this percentage of exemptions to medical students? It certainly and emphatically is. According to the selective draft law, persons registered may be exempted because they are: (1) supporting dependents; (2) ministers or theological students; (3) holding government positions, employed in munitions work, in agriculture, etc.; (4) physically defective, or (5) of alien birth. It is extremely rare that a medical student is a married man; extremely few are supporting dependents. Obviously those who are, have independent incomes, or they would not be in the medical schools. The second and third causes for exemption are excluded. As to physical defects, there is probably no group of men who, as a class, are physically better qualified than medical students. As to aliens: our investigation shows that the number of aliens is a minor quantity; one half of one per cent. of those replying reported themselves as aliens. We unhesitatingly assert that instead of there being 60 per cent. of exemptions among medical students, there will be less than 10 per cent. And from such evidence as we have before us, we still believe that the figures we have given in the past and that appear in another part of this issue are much more nearly correct than those that are here discussed based almost wholly on percentage calculations.

1. We are using the numbers given by General Crowder. As a matter of fact, the official figures quoted from the Official Bulletin are 9,659,382 men registered, not 10,000,000; the first call is for 687,000 men, not 700,000.

THE PROVOST-MARSHAL'S CONCEPTION OF MEDICAL EDUCATION

The following is from a memorandum from the Provost-Marshal, General Crowder, to the Secretary of War, under date of June 30:

"I think that any medical student drafted can continue his studies to the very best advantage in the Medical Corps of the United States Army and gain a practical experience which he could not gain at any other time than war. It would be very well, it seems to me, if all the medical students could be furloughed from the colleges into the Army for the purpose of taking this practical training, rather than furloughing them from the Army back to the medical schools to complete a technical course."

This, it must be remembered, comes from a man in a responsible position, and apparently endorsed by the Secretary of War. Is it possible that these officials imagine that medical science and medical education have made no progress since our Civil War?

THE PROPOSED COMPENSATION AND INSURANCE LAW

A most important piece of legislation, one which is destined to affect the entire social organization of our country, is the family allowance, compensation and insurance bill recently introduced in Congress and abstracted in this issue.[1] It is a war measure which immediately affects the welfare and the morale of our troops at the front. The soldier who knows that in case of death or disability his family will be permanently provided for is a better soldier than one whose morale, if not health, is weakened by anxiety regarding loved ones at home. The commander of the American troops in France — General Pershing — believes that it is not only unnecessary but also undesirable that the American soldier have for spending money each month the sum of $33 or more. The allotment of a portion of his pay to his family and the voluntary disposal of a certain sum per month toward the purchase of insurance will still leave him more

1. See The War Insurance and Compensation Bill, Medical Mobilization and the War, this issue, p. 652.

money than is received by most of the troops of our allies. The bill is not a bill to make the soldier dependent on the government after the war, but to encourage him to rehabilitate himself, to take up new work to make him better able to take care of himself and of his family. The law does not provide for pensions, but for compensation. It compensates the military workman of the government, just as many state governments compel employers to compensate their employees. The justice of the measure, especially for the men in the ranks and their dependents, will be fully appreciated by physicians. It will benefit the whole country in the way of maintaining the health and welfare of the mass of the population involved. As the Secretary of War has said, "When we draft the wage-earner, we call not only him but the entire family to the flag; the sacrifice entailed is not divisible."

NASOPHARYNGEAL DISINFECTION BY HYPOCHLORITES

When properly used, hypochlorite solutions may render infected wounds practically sterile so that they may be sutured with success, as illustrated by the results of Carrel's method. Naturally the question arises whether or not such solutions will be of value in disinfection of the nose and throat, especially in the case of diphtheria and meningococcus carriers. The general situation in the case of such carriers is, of course, by no means the same as in an infected wound. Infected wounds may be subjected to practically constant flushing with disinfectant solutions, the surfaces are either fresh or granulating, and the tissues are abundantly vascularized and infiltrated with leukocytes, so that they are in good condition for healing when foreign bodies and micro-organisms are removed. In the throat and nose, disinfectant solutions cannot be used constantly; there are many places which can be reached by disinfectants only with great difficulty and frequently not at all, such as deep crypts in the tonsils and in adenoids, abnormal conditions in the nose, etc., and the surfaces are covered with mucous membrane in which no active inflammatory or antibacterial processes are usually going on. And yet it surely does seem as if it might be possible so to apply disinfectants in the nose and throat that they would destroy rapidly bacteria like the diphtheria bacillus and the meningococcus, at least in persons with practically normal anatomic conditions. Many substances have been used for this purpose, but it has not been established that it is possible by means of disinfectants to hasten the removal of the offending bacteria in carriers. Recently encouraging results have been reported from the use of hypochlorite preparations.[1] Dunham and Dakin state that a marked diminution in the number of colonies obtained from the nasopharynx follows intensive spraying with dichloramin-T in oily solution. Conclusive evidence can be obtained only from the accurate study, properly controlled, of a large number of carriers. For this purpose, chronic diphtheria and meningococcus carriers should be used especially, because in them there is less likelihood of the spontaneous disappearance of the bacteria. Studies of this nature should be pursued with persistence and vigor, because no more important steps can be taken in the prevention of cerebrospinal fever and diphtheria than the discovery of a means whereby carriers can be promptly freed from meningococci and diphtheria bacilli in the nasopharynx.

1. Gordon: Brit. Med. Jour., 1916, **2**, 8. Gordon and Flack: Ibid., 1916, **2**, 673 (nebularized chloramin solutions). Beattie, Lewis and Cee: Ibid., 1917, **1**, 256. Dunham and Dakin: Ibid., 1917, **1**, 682.

MENINGOCOCCAL SKIN LESIONS

Several observers have noted the presence of meningococci in spots in the skin after death from cerebrospinal fever, and recently Netter and others[1] have demonstrated meningococci in purpuric and petechial eruptions during life, not only in cases with the usual meningeal symptoms and signs, but also in cases of meningococcus infection without meningitis or before meningitis had developed. It will be recalled that the development of petechial eruptions in cerebrospinal fever is an indication of grave prognostic significance; that such eruptions appear to have been more frequently present formerly than recently, and that the disease at one time was called "black death" because of the many deaths in cases with cutaneous eruptions. Netter and his associates find typical meningococci in the contents of little vesicles that may form on the surface of purpuric and petechial spots and also in the fluid that exudes after scarification of such spots. So far their cases have occurred in infants, and, as indicated, grave meningococcus infection has been diagnosed by this demonstration of meningococci in patients in whom typical meningitis had not developed, thus making it imperative to inject antimeningitis serum at a much earlier period than otherwise would have been the case, and even when it otherwise would not have been used at all. This finding of meningococci in skin lesions is quite analogous to the finding of typhoid bacilli in the rose spots of typhoid fever; in both cases it signifies that the organisms have been present in the blood. Besides being of great value in the early diagnosis and prompt serotherapy of meningococcus infection, the demonstration of the cocci in skin lesions may be of great value also from the point of view of prevention, because thereby cases of cerebrospinal fever may be detected that otherwise might escape observation, isolation, quarantine of contacts, etc. In all cases of obscure fever with peculiar skin eruption, the fluid in the tissues of the affected skin should be examined bacteriologically for micro-organisms, particularly meningococci; let it be remembered, however, that in this instance as well as in so many others, the negative result cannot be assigned any such value as may be assigned to the positive result.

1. Netter and others: Brit. Jour. Child. Dis., 1917, **14**, pp. 101 and 104.

The Autumn Purge.—Purges are good in autumn from the eighth kalends of October to the eighth kalends of December, for since in summer and winter the body produces phlegm and black bile or melancholy, as we call it, in autumn it should be purged of these.—Ancient Medicine.

Medical Mobilization and the War

The Surgeon-General and Drafted Students

We are asked to announce that the Surgeon-General's Office desires the names, addresses and ages of men in each class of every reputable medical school who have been drawn and accepted for military service under the provisions of the selective draft, these names to be vouched for by the deans of the respective medical colleges.

Modification of Physical Requirements for the National Army

The Surgeon-General has amended the regulations governing physical examinations for the National Army so as to authorize acceptance of men 61 inches in height, weighing not less than 110 pounds; 62 inches, same weight; 63 inches, not less than 112 pounds. He also authorizes acceptance of men 64 inches in height and over of less than standard weight, provided the underweight is due to temporary causes and can be reasonably explained.

Standard of Height and Weight for Medical Reserve Officers

To comply with the qualifications for the new National Army physicians will be accepted for the Medical Reserve Corps who are not under 61 inches in height or 118 pounds minimum weight, a variation of 8 pounds being allowed—110 pounds minimum—in case the applicant is otherwise physically fit. These physical requirements for the Medical Reserve Corps which were height, 64 inches; weight, 120 pounds minimum. Physicians who have been rejected on previous application for membership in the Medical Reserve Corps because of disability in minimum height and weight may apply again for commission to the board before which they first appeared.

Reserve Officers on Active Duty

There are at present approximately 8,000 medical reserve officers on active duty. This number includes those in training camps for Medical Reserve Officers, those mobilizing the National Guard, those in foreign service, and also a considerable number who have been sent to the Philippine Islands, to Hawaii, and to other American dependencies to relieve the regular medical corps men from those stations. On August 25, between 1,000 and 1,100 medical reserve officers will go to the various cantonments for the National Army to prepare for the advent of the first 200,000 men of the National Army who have been ordered to report at the cantonments on September 5.

The Conscription of Interns

Last week we referred to the fact that the hospitals of the country which employ interns were to be deprived of a certain proportion of interns by the draft. We have obtained figures from five general hospitals in Chicago. Of 117 interns in these five hospitals, forty-three have been accepted by draft boards and ordered to be prepared to report for military service. In addition, twenty-eight have been drafted from the eligible list of sixty from which the Cook County Hospital was prepared to draw to fill its shortage. Thus, of a total of 177 interns, seventy-one, or 40 per cent., have been drafted.

Physicians Recommended for Commission in the Medical Reserve Corps

During the week ending August 18, 834 physicians were recommended for commission in the Medical Reserve Corps, the proportion being six majors, seventy-one captains and 757 lieutenants.

Physicians in the Training Camps

On August 18, there were in the various training camps for Medical Reserve Officers approximately the following number of physicians: Fort Oglethorpe, 1,100; Fort Benjamin Harrison, 1,200; Fort Riley, 1,000; Allentown, Pa., 125; Fort Des Moines, Iowa, 72 (colored); total, 3,497.

Advice on Food

The Surgeon-General of the Army authorizes the following: Dr. Alonzo E. Taylor, member of the advisory board of food division of the Surgeon-General's Office, will visit the several medical officers' training camps and deliver a series of lectures on food values, food needs, and preparation and conservation of food.

The Disposal of Drafted Medical Students, Pharmacists and Physicians

There is considerable anxiety on the part of many of our readers concerning the drafting of persons in whom they are interested. Two physicians write concerning pharmacists; several have written as to what will be done with medical students, provided they are not to complete their medical education; and a large number have written as to disposal of physicians who have been conscripted. The reply to all these inquiries is that each man will be assigned to that particular work for which he is best fitted. So far as pharmacy is concerned, there is quite a large demand for pharmacists in connection with the Medical Department of the Army. So far as medical students are concerned, it is already announced unofficially that these will be assigned to the Medical Department and become a part of the enlisted Hospital Corps. Physicians, of course, will be assigned to the same department.

Hospital Interns and Medical Students and the Selective Service Act

Thirty-two of the leading hospitals of New York were represented at a meeting of the mayor's committee on Hospital and Medical Facilities in New York, August 15. A resolution was adopted calling the attention of the Secretary of War to the serious consequences to the civilian population of the country and to the maintenance and operation of the hospitals if medical students and hospital interns are not for the present withdrawn from the operation of the selective service act. The resolution provides that the views of the committee be laid before the proper officials of the government and the district boards of the state of New York, and requests that proper steps be taken for the temporary exemption of medical students and interns so that there may be a constant supply of medical men to the Army throughout the war, and to prevent the embarrassment of the hospitals and the consequent serious results to the people of the United States. At present, it is understood, no provision has been made by the government for such exemption.

The War Insurance and Compensation Bill

The war insurance and compensation bill pending in Congress is intended to apply to the tremendous hazards of war conditions for the benefit of our soldiers, sailors and their dependents, the protective principle of the industrial compensation laws and the additional privilege of individual insurance at a nominal cost; compensation rather than pensions in amounts fixed definitely in advance in the place of the chance of mere gratuities after the war; death insurance at such low rates that even the private may insure for the maximum sum allowed. The bill involves the economic welfare, and therefore the body welfare, of a large mass of our people. Physicians, especially, as well as all other citizens, will be vitally interested in it, and for their information the main features of the bill are given here.

The bill, with the approval of the President and strongly recommended by the Secretary of the Treasury, was introduced into both houses of Congress, August 10, as an amendment to the act establishing the Bureau of War Risk Insurance in the Treasury Department. The bill applies to all enlisted men of the Army and Navy as well as to the women of the nursing service of both branches, and sets forth in exact terms what will be done for every person in any relation to the soldier, sailor or nurse who is dependent on him or her for support, and also for the soldier himself in case of injury or disease in the way of free hospital treatment, appliances for mutilated men and provisions (which may be compulsory) for vocational training and reeducation. It provides for insurance against death at extremely low rates in any sum up to $10,000. As expressed by the Secretary of the Treasury, the main purpose of the bill "is to grant a reasonable government indemnity against the losses and risks incurred in the discharge of a patriotic duty and in the performance of extraordinarily hazardous service to which the

government has called and forced the citizens. It provides not only for the man, but for his family."

The provision for dependents, however, is not all to come from government funds; it is to a certain extent mutual. By a compulsory feature of the bill, unless waived or exempted, an allotment from the soldier's pay will be made to a wife and children up to the age of 18 of a minimum of $15 per month or not more than half the pay, and to other dependents such sums as the soldier may voluntarily agree to pay. In the case of the wife and children the allotment of government funds shall be from $5 to $50 per month, according to the size of the family, and in the case of other dependents the amount of their actual needs and the amount usually contributed by the soldier to their support; but no allowance will be made in the case of the latter by the government unless a voluntary allowance has been made by the soldier. A schedule of family allowances under the bill is as follows: In the case of a man to his wife (including a former wife divorced) and to his child or children: if there be a wife but no children, $15; if there be a wife with one child, $25; a wife and two children, with $5 additional per month for each child, $32.50; if there be no wife but one child, $5; if there be no wife, but two children, $12.50; if there be no wife, but three children, $20; if there be no wife, but four children, with $5 per month additional for each additional child, $30. The bill explicitly defines the status of wife and children, parents and others who may be entitled to compensation, and is liberal in its interpretation in this respect, for instance, including illegitimate children acknowledged by the father, or whom he has been judicially ordered to support.

In case death results from injury the percentages of the Army pay allowed to dependents shall be as follows: For a widow alone, 25 per cent., but not less than $30; for a widow and one child, 35 per cent., but not less than $40; for a widow and two children, 40 per cent., but not less than $50, with 5 per cent. additional, but not less than $5 for each additional child up to two; if there be no widow, then for one child, 20 per cent., but not less than $15; for two children, 30 per cent., but not less than $25; for three children, 40 per cent., but not less than $35, with 5 per cent. additional, but not less than $10, for each additional child up to two; for a widowed mother, 20 per cent., but not less than $25; the maximum monthly compensation for death shall be $200. Compensation for death is to continue until the children are 18 years of age and until two years after the remarriage of the widow, and the amount to be granted is to be determined by the status of the family at the time of each monthly payment.

Total disability from injury "so as to make it impracticable for the injured person to pursue any gainful occupation" is provided for in the following percentages of the pay: If the person has neither wife nor child living, 40 per cent., but not less than $40; if he has a wife, but no child living, 50 per cent., but not less than $55; if he has a wife and one child living, 55 per cent., but not less than $65; if he has a wife and two or more children living, 60 per cent., but not less than $75; if he has no wife, but one child living, 50 per cent., but not less than $50, with 5 per cent. additional, but not less than $10, for each additional child up to two; if he has a widowed mother substantially dependent on him for support, then, in addition to the above, 10 per cent., but not less than $10; $20 additional for a helpless person in constant need of nurse or attendant; the maximum monthly compensation to be $200.

The government, through this bill, does not intend to prevent the soldier from applying his income to the establishment of a business or to the purchase of a farm. The soldier is allowed to commute his compensation, but the government will protect him from his own folly because it permits him to commute only one half of his personal compensation and does not permit him to commute that portion which is for the use of his family nor the remaining half of his personal compensation. He will thus be independent of communal assistance even though he loses the sum which he has invested.

On certification within one year after resignation or discharge compensation may be claimed by the soldier or on his account for disability or death resulting from injury suffered or disease contracted while in the service. A man must avail himself of opportunities provided by the government under penalty of loss of compensation during any period of unreasonable refusal, but he retains the right to disability compensation regardless of economic recuperation.

An important and remarkable feature of this bill is the provision for government insurance covering total disability and death, to officers, men and Army nurses while in active service as part of the military or naval forces, enabling them to purchase insurance at a premium for the war period of from $7 to $8 per $1,000 for any sum up to $10,000. This feature was framed after thorough study by Judge Mack, the author of the bill, in cooperation with the actuary of the War Department and a number of other government department heads and other experts, and the low cost of the insurance to the men is based on the principle that the excess cost due to increased mortality and disability risk should under the circumstances be borne by the government, as should also the expense of administering the insurance bureau; contributory also to the possibility of low rates is the avoidance of the large expense of private companies in the way of agents' commissions, advertising, medical examination, profits, etc. The premiums are to be payable in instalments; the insurance is to be nonassignable and free from the claims of creditors either of the insured or the beneficiary. It is limited to the wife and children and to other relatives who are specified, and must be applied for within 120 days after the act is in force or after enlistment and entrance into the service. It is even provided that those who are disabled or die within the prescribed period of 120 days, before they have had opportunity to apply for the insurance, shall be considered to have applied for and will be allowed insurance in the sum of $5,000. After the war the insurance, it is said, may be converted into other forms with earlier maturity, but with the premium based on the same mortality tables of peace times. The liberal provisions of the bill will be apparent when they are contrasted with those of the present pension laws, which allow from $12 to $30 for a man, $8 for a widow and $2 for a child.

The estimated cost of this insurance for the first year has been placed at about $176,000,000, and for the second year, about $380,000,000. Objection has been raised to the bill on account of this apparently vast expense. The Secretary of the Treasury, however, calls attention to the fact that this will amount to only about 6 per cent. of the sums proposed to be expended for the other purposes of the war, and considering that it is for the benefit of the widows and orphans, the dependent and the injured, who make the real and the greatest sacrifices for the safety and honor of the country, objection on account of expense is not worthy of consideration. Nor indeed would the country escape possibly greater expenditures ultimately through the pension system, which this bill on its passage would replace.

A Petition for the Drafting of Physicians

The New York State Committee for National Defense some time ago passed resolutions to the effect that measures be instituted to secure the necessary federal legislation authorizing a selective draft of physicians based on a classification of physicians similar to that which was recently made of the physicians of New York state. In order to bring the matter before the attention of those interested, a committee was appointed to draw up a petition to the Congress of the United States to be circulated for signatures and then presented to Congress. Letters have been drafted for the medical boards of various hospitals, the county medical societies, the deans of various medical colleges, and the Council of National Defense, presenting the petition and urging that it be signed and presented to Congress. The petition follows:

A PETITION TO THE CONGRESS OF THE UNITED STATES FROM THE MEDICAL PROFESSION OF THE STATE OF NEW YORK

WHEREAS, A critical analysis, based upon a classification of physicians by the recent New York State Special Medical Census, when applied to the personnel resident in this State of the Medical Officers' Reserve Corps of the Army, has clearly demonstrated that the volunteer system of recruiting this personnel, now and hitherto in effect, has failed to secure an adequate number of physicians available and desirable for active army medical service; and

WHEREAS, Such analysis has likewise clearly demonstrated that the volunteer system has failed to exclude from this personnel physicians unfit for active military duty, by reason of age, physical disability, family obligations or many dependents; and

WHEREAS, The volunteer system has also failed to exclude from this personnel physicians whose services at home are essential to the public welfare in health departments, hospitals, medical colleges and isolated communities; and

WHEREAS, It has further failed to adjust equitably, in age or geographic or population distribution, the burden of military service upon the medical profession of the United States; and

WHEREAS, It has by these failures caused injury to the individual, to the community, to the medical profession and to the public; and

WHEREAS, The volunteer system puts an undesirable and embarrassing burden of decision upon those physicians whose services are most needed at home; and

WHEREAS, There exists no provision in the present draft law for drafting physicians as medical officers, but only as private soldiers; and

WHEREAS, The existing general draft law affects only those physicians who are of an age of maximum efficiency as soldiers and fails to affect many of those who are of an age most suitable for medical officers; and

WHEREAS, The justice, wisdom and effectiveness of the selective draft principle have been recognized by Congress in raising a strong army from our civilian population; and

WHEREAS, We are firmly convinced that a selective draft of physicians for military purposes, based upon a classification similar to that of the New York State Medical Census and designed specifically to exempt those unfit by reason of age, physical disability or many dependents, as well as those necessary for the maintenance of public health, hospital and community service and medical education, will be alike just to the individual, to the community and to the Nation, and that it will secure to the medical service of the National defense those best fitted for its uses while it retains at home those most needed in the community; and

WHEREAS, We, the undersigned physicians, graduates of standard medical colleges and duly licensed to practice medicine in the State of New York, mindful of our duty to our communities and State as well as to the Nation, are in favor of a selective draft of physicians between the ages of 21 and 45 years, for medical officers, in numbers sufficient for the Nation's military needs, based upon a classification by census, which shall exempt those unfit for military purposes and those necessary for the community at home; and

WHEREAS, We justly claim that such a selective draft of physicians when and if instituted shall and of right ought to exempt graduate physicians, students of medicine and pre-medical students in the General Draft Law age group from further liability to the provisions of the existing General Draft Law so long as they retain medical status; now therefore

WE, the undersigned physicians as aforesaid, do hereby petition the Congress of the United States for legislation enabling the President to direct the institution of such a classification and to proclaim and order such a selective draft.

Program of Social Hygiene for Soldiers, to Safeguard Their Morals and Health, Outlined by Surgeon-General's Office

The Surgeon-General's Office has authorized the following statement on the social hygiene program of the War Department in relation to other agencies:

In its popular interpretation, social hygiene has been used as a phrase to refer inclusively to all efforts for protection of the population from prostitution and venereal disease. Prostitution in its various forms affords the chief opportunity for disseminating the venereal diseases and promoting sexual promiscuity. Neither the military nor the civil authorities have been able effectively to combat this medical social evil alone. The assembling of troops in the vicinity of civil communities has always introduced a difficult social problem on the one hand and on the other has attracted the promoters of organized vice, who have established the commercialized activities known to increase the supply and demand for prostitution. The civil authorities within whose jurisdiction these practices were carried on were inexperienced in dealing with the situation, and the military authorities had no legal power under which to take action.

During the present war there is for the first time the opportunity to secure full cooperation between military and civil forces in applying the medical, social, moral, and economic knowledge which has been demonstrated to have a bearing on the repression of prostitution and the reduction of the prevalence of venereal diseases. Public opinion will now support a sound program, and sufficient authority has been secured through legislative and administrative action to promise important results.

MEASURES PROPOSED

The paramount national issue is the winning of the war, and every resource, both military and civil, must be applied toward this end. The social hygiene program has, therefore, been centered administratively on the protection of the military, naval, and other governmental forces. The success attained, however, is equally to the advantage of the civil population. So far as these administrative measures relate to the United States Army they may be grouped under five headings:

1. *Army Medical Department.*—Military measures for combating venereal diseases.

2. *United States Public Health Service.*—Epidemiological measures for the control of venereal diseases in the civil sanitary districts.

3. *War Department Commission on Training Camp Activities.*—(*a*) Law enforcement measures in the department zones. (*b*) Recreation measures in the department zones.

4. *Civil Authorities.*—Law enforcement, recreation, facilities for treatment of venereal diseases and protection and control of women and girls.

5. *Nonofficial Agencies.*—Social hygiene activities of volunteer organizations recognized for special services.

Each of these groups includes a variety of activities carried out by widely different agencies that have been available at the moment of necessity, and having proved useful have continued to function.

THE ARMY MEDICAL DEPARTMENT

The Medical Department of the Army is limited in its strictly official capacity to measures for the prevention and treatment of veneral diseases inside the military encampments. Unofficially the Surgeon-General and his staff are in full accord and cooperation with the agencies to which reference has been made. A section has been organized to devote its attention to this problem, with an officer in charge of the laboratory investigations, one in charge of medical work, and one in charge of educational and environmental measures and sociological studies. These officers will have the cooperation of the officer who is in charge of sanitary inspection, and the officer who directs the division of training camps. While the creation of a special section is new it should be stated that the work has been carried on by the Army for many years. The activities of the section may be summarized under the following headings:

1. Educational work adapted so far as practicable to the individual needs and responsibilities of the men and officers, and conducted through personal interviews, group talks, illustrated lectures, exhibits, pamphlets, and library reference books.

2. Prophylactic stations for minimizing the number of infections developing after exposure, and for personal advice and warning directed toward lessening the number of future exposures.

3. Diagnosis and treatment facilities for cases of syphilis and gonococcus infections which develop in spite of efforts to prevent them.

4. Enforcement of penalties against those who ignore advice and instruction to avoid sexual intercourse and venereal disease.

5. Epidemiological studies of the venereal diseases to discover any new measures which may be applied.

PUBLIC HEALTH SERVICE

The United States Public Health Service has been charged with the responsibility for health conditions in civil sanitary districts surrounding military establishments. The work will be done in cooperation with the State and local authorities and with the American Red Cross through an advisory board. The venereal diseases, as dangerous communicable diseases, are included in the program. The following are the principal lines of activity to be undertaken in relation to these diseases:

1. Promotion of public opinion in support of the social hygiene program agreed upon.

2. Survey and standardization of dispensary and hospital facilities for venereal diseases.

3. Cooperation with private practitioners in minimizing the dissemination of infections.

4. Extension of laboratory, clinical, and advisory service for venereal diseases in communities under civil auspices.

Efforts along each of these lines will simplify and render more effective the Army measures.

COMMISSION ON TRAINING CAMP ACTIVITIES

In order to deal effectively with social hygiene in all its phases the Secretary of War has created the commission on training camp activities to carry out the law enforcement regulations promulgated by him under the authority of Congress and the President. This commission has also been charged with important activities in furnishing recreation for the troops. Under these two divisions the commission's work as it indirectly bears on the control of venereal diseases may be summarized as follows:

A. Law enforcement measures.
   1. Elimination of commercialized prostitution in the cantonment zones.
   2. Repression of clandestine prostitution.
   3. Control of alcohol and other aids to prostitution.
   4. Combating of gambling, use of drugs, and other harmful practices.

B. Recreation measures.
   5. Social and educational activities of recreation huts in the cantonments, and of recognized agencies in the cantonment zones.
   6. Theatrical and other entertainment programs.
   7. Athletic contests, tournaments, and games.
   8. Reception tents for visitors.
   9. Libraries of popular books and other facilities provided under the direction of the commission.

CIVIL AUTHORITIES

It is recognized that neither the measures within the military establishments nor the supplementary measures in specified zones can achieve the largest success without full cooperation of civil authorities in enforcing equivalent measures in all communities accessible to the personnel of the military forces. The carrying out of the following program, which

has been inaugurated in many cities and towns, is of great importance to the Army and to national efficiency:

1. Enforcement of laws and ordinances against prostitution and alcohol.

2. Establishment of proper facilities for advice and treatment of persons infected with venereal diseases.

3. Provision of attractive recreation and entertainment for the leisure hours of the population.

4. Moral protection and education of women and girls.

NONOFFICIAL AGENCIES

The complicated interlocking of military and civil interests in the protection of soldiers and civilians from vice and disease affords an opportunity for many useful activities of volunteer agencies. This is particularly true in the field of social hygiene. In the interest of efficiency and avoidance of confusion and duplication of effort a small number of such agencies have been recognized as clearing houses for military-civil work of a very large number of organizations in their respective fields.

American Women's Hospitals

"The War Service Committee of the Medical Women's National Association," according to a note from Dr. Ethel D. Brown, secretary, "has organized the American Women's Hospitals for work at home and abroad. The Surgeon-General of the Army and the General-Director of the Department of Military Relief of the American Red Cross have approved the provision made for service to the Army and to the civil population. The work will be officially part of the medical and surgical service of the American Red Cross. The scope of the plan is a broad one. It includes units for maternity service and village practice in the devastated parts of the Allies' countries and hospitals run by women for service there as well as for the United States Army in Europe. In this country acute and convalescent cases will be treated in hospitals equipped for the purpose; soldiers' dependents will be cared for, interned alien enemies will be given medical aid and substitutes will be provided to look after the hospital service and the private practice of physicians who have gone to the front. The first units hope to go to France and to Serbia in the early fall. Headquarters have been established at 637 Madison Avenue, New York. Dr. Rosalie Slaughter Morton is chairman of the War Service Committee."

Orders to Officers of the Medical Reserve Corps

ALABAMA

To Baltimore, Phipps Clinic, for a six weeks' course of training, Major Eugene D. Bondurant, Mobile, and Lieut. Wilbur L. Heard, Mt. Vernon.

To Brownville, Texas, for duty with Base Hospital No. 3, Lieut. Duncan P. Dixon, Talladego.

To Fort Des Moines, for duty, Lieut. Thomas L. Zuber, Carrollton.

To Fort Oglethorpe, for instruction, Lieuts. Albert S. Zimmerman, Larkinsville; Cecil H. Ross, Mobile; Robert Goldthwaite, Montgomery; Jesse McC. Reed, Ray Minette; and Charles D. Mason, Scottsboro.

ARKANSAS

To Fort Riley, for instruction, Lieut. Kenneth B. Huffman, Bentonville.

CALIFORNIA

To Army Service School, Washington, for duty, Lieut. Jean R. Oliver, San Francisco.

To Fort McDowell, Calif., for duty, Lieut. Mark A. Williamson, Lone Pine.

To Presidio of San Francisco, Letterman Hospital, for duty, Lieut. Kenneth J. Staniford, Fresno.

To Report in Person to Commanding General, Western Department, for duty, Major Herbert C. Moffitt, Capts. Gustav J. Bergener, William R. P. Clark, San Francisco; Lieuts. Michel H. Etcheverry, Herman Verplank Hoffman, and George R. Hubbell, San Francisco.

To Sparta, Wis., for duty with 17th Field Art., Lieut. William A. Sampson, San Francisco.

COLORADO

To Fort Douglas, Utah, for making examinations in his specialty, Lieut. Phillip Work, Pueblo.

To Fort Snelling, Minn., for duty with 41st Infantry as surgeon, Lieut. William J. McDonald, Fowler.

CONNECTICUT

To Rantoul, Ill., for duty as post surgeon, Capt. Richard Blackmore, Farmington.

DISTRICT OF COLUMBIA

To Army Medical School, Washington, for the purpose of taking sick calls at the Coast Artillery Camp, East Potomac Park, Capt. James W. Hart, Washington.

To Fort Des Moines, for duty, Lieut. Silas S. Thompson, Washington.

To Walter Reed General Hospital, Takoma Park, Lieuts. Daniel L. Borden, and Adam Kemble, Washington.

Honorably discharged, Lieut. Harry Cockerville Blair, Washington.

FLORIDA

To Fort Des Moines, for duty, Lieut. James M. Ponder, Ocala.

To Fort Oglethorpe for instruction, Major Raymond C. Turck, Jacksonville, and Lieut. Stanley Erwin, Jacksonville.

To Philadelphia, for course of instruction in military roentgenology, Lieut. Harry B. McEuen, Quincy.

GEORGIA

To Allentown, Pa., for duty, Lieuts. James E. Pitman, Decatur; and Heber J. Morton, Waynesboro.

To Fort Oglethorpe for instruction, Lieuts. James A. McAllister, Atlanta; Thomas E. Oden, Blackshear; and Richard Binion, Sparta.

IDAHO

To report by telegraph to commanding general, Western Department, for duty, Capt. Edward E. Maxey, Boise.

ILLINOIS

To Chicago, enlisting personnel of American Red Cross Ambulance Co., No. 3, Capt. Elbert Clark, Danville.

To Fort Benjamin Harrison, for instruction, Capt. Charles A. Stevens, Lieuts. Thomas P. Foley, Robert H. Lowry, Jr., Chicago; and Ralph R. Trueblood, Lawrenceville.

To Fort Leavenworth for duty as surgeon with 7th Engineers, Lieut. Lawrence H. Roblee, Chicago.

To Fort Riley, for instruction, Lieut. Robert G. Bond, Harrisburg.

To Fort Sheridan, for duty, Capt. Robert C. Fullenweider, La Salle.

To Sparta, Wis., for duty with 17th Field Art., Capt. Walter F. Von Zelinski, Chicago; with 16th Field Art. as assistant to the surgeon, Lieut. Frank C. Murrah, Herrin.

To report to Surgeon General of Army, for duty in his office, Major William H. G. Logan, Chicago.

INDIANA

To Fort Douglas, Utah, Lieut. Albert G. Grubb, Mongo.

To Fort Sheridan, Ill., for duty Capt. William H. Lane, Angola.

Resignation of Lieut. Charles C. Moore, Owensburg, is accepted.

IOWA

To Army Service School, Washington, for duty, Lieut. Daniel J. Glomset, Des Moines.

To Fort Riley for instruction, Lieut. Thomas V. Golden, Afton.

To Sparta, Wis., for duty with 16th Field Art. as assistant to the surgeon, Lieut. Edward S. Parker, Hagrove.

KANSAS

To Allentown, Pa., for duty, Capt. Jirah M. Downs, Ellsworth.

To Fort Riley, for instruction, Lieuts. Harrison W. Wright, Enterprise; Andrew Engberg, McPherson.

To Fredonia, Kan., enlisting personnel of Red Cross Ambulance Co. No. 16, Lieut. Walter P. Guy, Winfield.

To Gettysburg, Pa., for duty with 1st Hospital and Ambulance Co., Lieut. Robert L. Hoffman, Wichita.

Resignation of Lieut. Edwin R. Tenney, Kansas City, is accepted.

KENTUCKY

To Fort Oglethorpe, for instruction, Lieut. Louis W. Frank, Louisville.

To Gettysburg, Pa., for duty with 1st Hospital and Ambulance Co., Lieut. William S. Ehrich, Louisville.

To Sparta, Wis., for duty with 17th Field Art., Lieut. Carroll P. Price, Harrodsburg.

LOUISIANA

To Fort Des Moines, for duty, Lieut. Oliver W. Landry, New Orleans, La.

To Fort Riley, Kans., for making examinations in his specialty, Lieut. Ralph C. P. Truitt, Jackson.

To Fort D. A. Russell, Wyo., for making examinations in his specialty, Lieut. Louis V. J. Lopez, New Orleans.

MARYLAND

To Camp Kelly, South San Antonio, for duty with 31st Aero Squadron, Lieut. Fred P. Weltner, Baltimore.

To Fort Benjamin Harrison for instruction, Capt. Herbert B. Montgomery, Lanham; and Lieut. Herbert W. Rogers, Baltimore.

To Fort Oglethorpe for instruction, Capt. George E. Lewis, Rockville, and Lieut. Lewis H. Howard, Baltimore.

MASSACHUSETTS

To Fort Benjamin Harrison, for duty with the 48th Infantry as surgeon, Capt. Miles D. Chisholm, Westfield.

To Fort Sill, Okla., for making examinations in his specialty, Lieut. John J. Stack, Boston.

To Gettysburg, Pa., for duty with 1st Hospital and Ambulance Co., Lieut. Albert Pfeiffer, Lexington.

To Quonset Point, R. I., as assistant camp surgeon, Lieut. Frank Piper, Boston.

MICHIGAN

To Detroit, Mich., enlisting personnel of Red Cross Ambulance Co., No. 8, Lieut. Clarence L. Candler, Detroit.

To Fort Riley, for instruction, Lieut. Walter N. Sallisbury, Ann Arbor.

To Grand Rapids, Mich., enlisting personnel of American Red Cross Ambulance Co., No. 15, Capt. Thomas D. Gordon, Grand Rapids.

MINNESOTA

To Fort Riley for instruction, Lieut. James Farrage, Breckenridge.

To Sparta, Wis., for duty with 16th Field Art. as assistant to the surgeon, Lieut. Charles F. McClusker, Minneapolis.

MISSISSIPPI

To Fort Oglethorpe for instruction, Lieut. Canning Tom Bell, De Kalb.

To report by telegraph to commanding general, Southern Department, for duty, Lieut. Clyde M. Speck, Blue Springs.

MISSOURI

To Fort Oglethorpe, for instruction, Capt. Douglas Haggard, Nevada.

To Fort Riley, for instruction, Lieut. Otto N. Schudde, Sullivan.

So much of Par. 32, S. O. 180, Aug. 4, 1917, War D., as relates to Capt. Douglas Haggard, Nevada, is revoked.

MONTANA

To Fort Riley, for instruction, Lieut. Serge Androp, Richey.

NEBRASKA

To Fort Riley, for instruction, Lieut. Abel B. George, Beatrice.

To Sparta, Wis., for duty with 17th Field Art., Lieut. Frederick A. Van Buren.

Honorably discharged, Capt. Carl F. Roh, Seward.

NEVADA

To Fort Leavenworth, for duty with 7th Engineers, Lieut. Delos A. Turner, Goldfield.

NEW JERSEY

To Fort Des Moines, for duty, Lieut. James R. Stroud, Jersey City.

To Fort Ontario, N. Y., for duty, Lieut. Widmer E. Doremus, Arlington.

Relieved from further active duty, Lieut. Edward F. Fitzpatrick, Newark.

NEW YORK

To Allentown, Pa., for duty, Lieut. Vernon C. Heddens, Bronxville.

To Army Service School, Washington, for duty, Lieuts. Russell LaFayette Cecil, Henry E. Meleney, and Malcolm McBurney, New York, N. Y.

To Fort Benjamin Harrison, for instruction, Capts. Joseph B. Cooke, Cooperstown; for duty with the 45th Infantry as surgeon, Junius H. McHenry, New York, N. Y.; for duty, Lieut. Benjamin E. Helprin, Brooklyn.

To Fort Delaware, Del., for duty, Lieut. Rowland P. Stanley, New York, N. Y.

To Fort Leavenworth, for duty, Lieut. David M. Kaplan, New York, N. Y.

To Fort Snelling, for duty with 41st Infantry, Lieut. Joseph H. Beattie, Dobbs Ferry.

To General Hospital No. 1, New York, N. Y., for duty, Lieut. Edward G. Cary, New York, N. Y.

To Gettysburg, Pa., for duty with 1st Hospital and Ambulance Co.; Lieuts. Louis R. Steibel, and John W. Warner, New York, N. Y.

To Rantoul, Ill., Lieut. Conrad Berens, Jr., New York, N. Y.

To report by telegraph to commanding general, Eastern Department, for assignment to duty, Lieut. John B. Byrne, Jr., Brooklyn.

To Syracuse, N. Y., Lieut. Brewster C. Doust, Syracuse.

To Washington Barracks, D. C., for making examinations in his specialty, Lieut. Edward L. Hanes, Rochester.

So much of Par. 109, S. O. 181, Aug. 6, 1917, War D., as relates to Lieut. Edward G. Cary, New York, N. Y., is revoked.

So much of Par. 159, S. O. 165, July 18, 1917, War D., relating to Capt. Joseph E. Donnelly, New York, N. Y., is revoked.

Honorably discharged, Lieut. L. Grant Baldwin, Brooklyn.

NORTH CAROLINA

To Fort Oglethorpe for instruction, Lieut. Nathan H. Andrews, Rowland.

To Hot Springs, Ark., for duty, Lieut. Thomas B. Henderson, Henderson.

To report by telegraph to commanding general, Southern Department, for duty, Lieut. Edward M. McCoy, Huntersville.

To Newport News, Va., for duty, Capt. James E. Stokes, Salisbury.

Honorably discharged, Capt. Montgomery H. Biggs, Rutherfordton.

NORTH DAKOTA

To Sparta, Wis., for duty with 16th Field Art. as surgeon, Lieut. Philip G. Reedy, Regan.

OHIO

To Columbus Barracks, Ohio, for duty, Lieut. Harold V. Postle, Columbus.

OKLAHOMA

To Fort Riley for instruction, Lieut. Clarence R. McDonald, Broken Bow.

To report by telegraph to commanding general, Southern Department, for duty, Lieuts. Jackson Brashear, Lawton; and Howard A. Wagner, Shawnee.

OREGON

To Fort Leavenworth, for duty with 7th Engineers, Lieut. Philip J. Keizer, North Bend.

To Presidio of San Francisco, Calif., Letterman Hospital, for duty in the department laboratory, Capt. David N. Roberg, Portland.

To report by telegraph to commanding general, Western Department, for duty, Capts. Herbert M. Greene, John J. Sellwood, Portland; and Harry E. Clay, Salem.

Resignation of Lieut. Marion J. Jones, Portland, is accepted.

PENNSYLVANIA

To Allentown, Pa., for duty, Lieut. Dwight E. Long, Freeberg.

To Army Service School, Washington, for duty, Lieut. Russell Richardson, Newton.

To Baltimore, Phipps Clinic, for a six weeks' course of training, Lieut. Victor J. P. Jourdan, Philadelphia.

To Fort Oglethorpe for instruction, Capts. William D. Hunter, Monessen; David S. Bergey, Philadelphia; Lieuts. Edward L. Artman, Jr., and Benjamin F. Buzby, Philadelphia.

To Fort Snelling, Minn., for duty with 40th Infantry as surgeon, Capt. George C. Kieffer, with 41st Infantry Lieut. Cheney M. Stimson, Philadelphia.

To Gettysburg, Pa., for duty with 1st Hospital and Ambulance Co., Lieuts. John D. Elliott, Philadelphia; Samuel Hamilton, Jr., Pittsburgh; Ira A. Rowlson, Plattsburg; Benjamin J. Longwell, Seminole; with reorganization camp, William C. Stiff, Plymouth.

To Lock Haven, Pa., enlisting personnel of Red Cross Ambulance Co., No. 41, Lieut. Lee McC. Goodman, Jersey Shore.

So much of Par. 46, S. O. 174, War D., July 28, 1917, as relates to Lieut. John D. Jungmann, Philadelphia, is revoked.

Honorably discharged, Lieut. Robert A. Schless, Philadelphia.

PHILIPPINE ISLANDS

To Regan Barracks, Albany, for duty, Lieut. Thomas C. Walker, Manila.

SOUTH CAROLINA

To Fort Oglethorpe for instruction, Lieut. Jeff N. Webb, Townville.

To Greenville, S. C., Lieuts. Charles W. Gentry, James L. Orr, Greensville.

SOUTH DAKOTA

To Fort Oglethorpe for instruction, Lieut. Archie McCallister, Crow Creek.

TENNESSEE

To Allentown, Pa., for instruction, Lieut. H. R. Townsend, Nashville.

To Fort Des Moines, Iowa, for duty, Lieut. Lucius H. Gilmore, Columbia.

TEXAS

To Camp Kelly, South Antonio, for duty with 30th Aero Squadron, Lieut. Joseph H. Graves, Waco.

To Fort Clark, for duty and assignment to Ambulance Co. No. 29, to be organized, Lieut. James G. Ellis, Dennison.

To Fort Sam Houston for duty, Capts. Edgar W. Loomis, Dallas; and William H. Hargis, San Antonio.

To report to commanding general, Southern Department, for duty, Lieut. Wesley J. C. Wiemers, Galveston.

To report by telegraph to commanding general Southern Department, for duty, Lieuts. Thomas N. Roach, Medicine Mound; and Paul R. E. Sheppard, Terrell.

VIRGINIA

To Fort Benjamin Harrison for duty, Capt. Wyndham B. Blanton, Richmond.

To Fort Oglethorpe for instruction, Lieut. Claude N. Rucker, Clifton Forge.

To Newport News, Va., for duty, Capt. George A. Renn, Norfolk.

WASHINGTON

To report by telegraph to commanding general, Western Department, for duty, Capt. Herbert C. Lieser, Vancouver.

WEST VIRGINIA

To Fort Des Moines, Iowa, for duty, Lieut. James M. Whittico, Williamson.

WISCONSIN

To Allentown, Pa., for duty, Lieut. Charles A. Squires, Sheboygan.

Orders to Officers of the Medical Corps

Major Joseph F. Siler, M.C., Detachment Laboratory, Fort Sam Houston, to New York City for duty as C. O., Base Hospital No. 8, New York Post-Graduate Hospital, New York City.

Major Llewellyn P. Williamson, M. C., to Fort Sill, Okla., and report August 18 to inaugurate a system of instruction in gas defense.

Capts. William H. Smith and Charles C. Demmer, M. C., will report at Camp Travis, Fort Sam Houston, for duty as C. O. of base hospitals to be established at that camp.

Capt. William L. Sheep, M. C., to Camp Greene, Charlotte, N. C., for duty.

So much of Par. 80, S. O. 175, July 30, 1917, War D., as relates to Capt. Omar H. Quade, M. C., is revoked.

Capt. Lloyd A. Kefauver, M. C., to Annapolis Junction, M.D., Camp Meade, for commanding base hospital to be organized there.

Capt. Ernest R. Gentry, M. C., to Washington for duty.

Capt. Raymond W. Bliss, M. C., to duty at Camp Wheeler, Macon, Ga.

Officers of M. C. now on duty as camp sanitary officer at the camp specified will report in person to C. O. of that camp for commanding the base hospital to be established there: Capt. W. Cole Davis, Camp Dix, Wrightstown, N. J.; Capt. James F. Johnston, Camp Jackson, Columbia, S. C.; Capt. Glenn I. Jones, Camp Devens, Ayer, Mass.; Capt. Kerwin W. Kinard, Camp Sherman, Chillicothe, Ohio; Capt. Henry C. Michie, Jr., Camp Grant, Rockford, Ill.; Capt. Eugene G. Northington, Camp Lewis, American Lake, Wash.; Capt. Neal N. Wood, Camp Custer, Battle Creek, Mich.

Orders to Officers of Sanitary Corps

Capt. George J. Gabriel, Sanitary Corps, to duty at St. Louis.

Capt. Richmond Mayo-Smith, Sanitary Corps, to New York Sanitary Corps, medical supply depot, for duty.

Capt. John W. Hicks, Sanitary Corps, to duty at Chicago.

First Lieut. Shelby G. Fell, Sanitary Corps, to duty at Newport News, Va.

The following officers of Sanitary Corps to report in person to the Surgeon-General for assignment to duty in his office:

Capts. John B. Copping, Patrick P. Vane and Richard A. Wood.

Officers of Sanitary Corps to duty at camps specified as supply officers: Capt. William C. Livingston, Camp Lewis, American Lake, Wash.; First Lieuts. James Sweeney, Camp Pike, Little Rock, Ark.; John Baigent, Camp Dodge, Des Moines, Iowa, and Herman J. Weber, Rockford, Ill.

First Lieut. Harold J. Feistel, Sanitary Corps, to duty at medical supply depot, New York, N. Y.

First Lieut. George W. Ramaker, Sanitary Corps, to duty at San Antonio, Texas.

First Lieut. Max Weinberg, Sanitary Corps, to duty at Ayer, Mass.

Orders to Contract Surgeons

Contract Surgs. A. F. Beifeld and J. C. Friedman, Chicago, assigned to active duty, central department.

Orders of July 24 to Contract Surg. R. S. Dorsett, Philadelphia, amended. He is assigned to active duty for the purpose indicated in said order.

The following assigned active duty, Kansas City, Mo., in connection with the examination of the troops of the national guard for tuberculosis: W. W. Drake, Samuel Ayres and H. D. Hamilton.

Contract Surg. L. A. Klein, Brooklyn, will inspect the remount depots.

The following contract surgeons assigned active duty with national guard: J. J. Singer, H. B. Grensfelder, and E. W. Taylor, St. Louis; C. G. Dewey, J. B. Ayer, H. R. Stedman, F. C. Richardson, L. V. Briggs, D. A. Thom and I. H. Coriat, Boston, and Abraham Myerson, Taunton, Mass.

The following assigned active duty, examining the troops in the vicinity of Albany for tuberculosis: William Kirk, E. R. Stillman and H. W. Carey.

Contract Surg. J. A. O'Connell assigned active duty, Philadelphia, examining for tuberculosis.

First Lieut. R. L. Patterson assigned active duty, report to Dr. Van Manning, director of bureau of gas warfare investigation, Washington.

Capt. Clark L. Brown assigned active duty, Washington.

Capt. Oscar Burkard assigned active duty, Camp Upton, as property and supply officer.

Contract Surg. R. C. Kirkwood, Coneter, Iowa, assigned active duty.

Contract Surg. F. J. O'Connor assigned active duty at Toronto, Canada, to examine applicants for aviation section.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

District Health Officers Appointed.—At the meeting of the state board of health, the following district health officers were appointed: Northern Coast District, Dr. Allen S. Gillihan, Berkeley; Middle Coast District, Dr. George B. Hoitt, Manchester, N. H.; Central District, Ralph Nauss, Berkeley; Southern District, E. A. Ingham, Boston; Northern District, Harold F. Gray, San José, and Southern District, Dr. Edwin D. Ward, Los Angeles.——Dr. F. H. Kellogg, Berkeley, has been appointed director of the department of communicable diseases, succeeding Dr. J. C. Cummings, resigned to enter the federal service.——Dr. Ida May Stevens has been appointed bacteriologist in the branch laboratory of communicable diseases, Los Angeles.

Annual Registration Fee.—Among the amendments passed by the 1917 legislature in California was one providing for a $2 registration fee payable to the Board of Medical Examiners by all holders of any form of certificates issued by the present or any previous licensing board of that state. The fee is due January 1 of each year. Failure to pay the fee within sixty days automatically revokes the certificate, and must be paid in order to restore it. Thirty days prior to January 1 of each year the board will forward a notice to each certificate holder, and it is essential that licentiates notify the board of each change of address. The board expects to publish each year a directory of the licensed practitioners of the state, physicians as well as osteopaths, and drugless healers, and will send a copy to each licentiate who has paid his annual fee.

Personal.—Dr. Anna E. Rude, San Francisco, has been appointed a member of the staff of the Federal Children's Bureau, Washington, D. C.——Dr. Emmet L. Wemple, a member of the staff of St. Luke's Hospital, San Francisco, was attacked, August 6, in the lobby of a hotel where he had gone to make a special call, and is under treatment at the Central Emergency Hospital.——Dr. T. Percival Geroen, Los Angeles, was operated on in the Good Samaritan Hospital, Los Angeles, August 1, on account of an injured knee.——Dr. Elizabeth Follansbee, Los Angeles, who has been ill in a hospital, is convalescent and has returned home.——Dr. Herman S. Senftner, formerly a member of the California State Sanitary Board, has been appointed state sanitary supervisor for that district of New York which includes Erie, Niagara, Orleans and Tennessee counties, with headquarters in Buffalo.——Dr. Ernest B. Hoag, Pasadena, medical psychologist to the Los Angeles Judiciary Court, has been appointed lecturer in criminology in the school of jurisprudence of the University of California, Berkeley.

ILLINOIS

Clinic at State Hospital.—A clinic on nervous and mental diseases was held at the Watertown State Hospital, August 23, under the auspices of the Iowa and Illinois Central District Society. Cases of special interest were selected and presented by Drs. Julius Grinker, Chicago; Charles F. Reed, superintendent of the hospital, and Edward A. Foley, first assistant.

Health Zones Created.—The state board of health has announced the creation of four special health districts, each embracing a zone adjacent to a military or naval camp site. These districts are as follows:

1. Camp Grant district, including the city of Rockford: Medical officer, Dr. Charles E. West, Springfield; sanitary health officer, P. H. Cooney, Chicago.
2. Great Lakes—Fort Sheridan district: Health officer, Dr. John Kappelman, Mt. Vernon; sanitary officer, Dr. Jerome Smejkal, Chicago.
3. Lincoln-Lowden District, including the city of Springfield: Medical health officer, Dr. John J. McShane; sanitary officer, Edward Cowles.
4. Camp Chanute Aviation District, including Rantoul: Medical and sanitary officer, Dr. John J. McShane, Springfield.

The executive officer of each of these districts will be the medical health officer, and will report directly to the secretary of the state board of health.

Chicago

Field Hospital Commander Transferred.—Major Gustavus M. Blech, commanding Illinois Field Hospital No. 2, has been appointed assistant to the chief surgeon of the Thirty-Third Division, Camp Logan, Houston, Texas, and left for his new post of duty, August 21.

Graduate Lecture.—Dr. G. Carl Huber, professor of anatomy in the University of Michigan, Ann Arbor, recently delivered an address on "Early Stages in Mammalian Development," before the faculty of students of the graduate summer quarter in medicine of the University of Illinois.

Fine for Medical Fraud.—Amante Rongetti was found guilty of having sold a false medical diploma recently, and was fined $2,000 in Judge Fitch's court. Rongetti was indicted April 24, 1916, following action taken by the Illinois State Board of Health. Dr. Gaetano Ronga, a codefendant, was acquitted.

Appropriation Asked for Contagious Diseases.—Health Commissioner Robertson has asked for an appropriation of about $35,000 to fight the epidemic of contagious diseases due to the recent influx of colored labor in Chicago. He recommends a house-to-house canvass, and vaccination in the localities where smallpox has been found.

Personal.—Dr. James M. Neff has returned to Chicago after an absence of more than two years at the British Base Hospital, Etaples, France. Dr. Neff has been commended in general orders for superlative service.——Dr. Harry R. Hoffman, chief alienist of the Bridewell, has been ordered to report to Ann Arbor for military service as a member of the psychiatric unit.

Ambulance Company Starts East.—The University of Chicago Ambulance Company No. 3, under command of Capt. Elbert Clark, has been called into actual service and entrained for Allentown, Pa., August 20. The company has a personnel of 180, and takes with it six ambulances, four of which were donated by the friends of the institution and two by the American Red Cross. It also has a motor laboratory donated by the students of the university, and five kitchens on wheels.

INDIANA

Smallpox in Soldiers' Home.—Two cases of smallpox have been discovered in the Soldiers' Home, Lafayette, and all the inmates have been vaccinated.

Tuberculosis Cottage Donated.—Mr. and Mrs. R. Bockhoff, Richmond, have donated the first cottage to be built as a part of the Wayne County Tuberculosis Sanatorium.

New Hospital.—The Jeffersonville Tribe of the Improved Order of Red Men has purchased the former home of Marshall Hospital, which it proposes to remodel and open as a general hospital for the city.

City Health Board Must Borrow.—The City Health Board of Indianapolis has asked for a temporary loan of $45,000 to defray the expenses of the department until funds are available from the fall instalment of taxes.

Sanatorium will Open Next Month.—Sunnyside Sanatorium, Oaklandon, the Tuberculosis Institution of Marion County,

will be opened in September, with a capacity of seventy patients, which will be increased later. An outpatient department will be conducted in connection with the institution. Dr. Harold S. Hatch has been appointed superintendent, and has already assumed charge of the institution.

Personal.—Dr. John C. McClelland, formerly health officer of Lafayette, has been commissioned captain, and assigned to duty with the Fourth Indiana Infantry.——Dr. Arett C. Arnett has been commissioned captain, and assigned to the First Indiana Artillery.——Dr. C. E. Cekul, La Otto, was caught under his overturned automobile near Sheldon, August 7, fracturing several ribs. He is under treatment in a hospital in Fort Wayne.——Dr. William M. Reser has been appointed secretary of the Lafayette Board of Health.——Col. Larue D. Carter, Indianapolis, has been appointed chief surgeon of the state.

IOWA

Hospital Items.—Shenandoah is to have a new hospital, to cost about $45,000.——The LeMars hospital has been purchased from Drs. G. Henry Mammen and Roy F. Bellaire, and is now under the charge of the Sisters of St. Francis of Dubuque. The hospital has been enlarged and remodeled, and a Sister's home will be built on the property.

National Guard Changes.—Lieut. Larned Allen, Davenport, has been assigned to the staff of the chief surgeon.——Lieuts. Peter H. Schroeder and John C. Murphy, Davenport, have been assigned to the First Field Artillery.——Major David S. Fairchild, Jr., Clinton, and Pierre McDermid, Fontanelle, have been assigned to headquarters staff.——Lieuts. Willis H. McClain and Redfield C. Mills have been attached to the field hospital.

Work of State Laboratories.—By the annual report of Dr. Henry Albert, Iowa City, of the state university, director of the state board of health laboratories, 23,272 examinations and preventive treatments have been given during the past year. Of these, 8,994 were for diphtheria, 3,429 for tuberculosis, 1,965 for typhoid fever, 493 for meningitis, three for malaria and 163 miscellaneous. All these were made at the central laboratory of the state university, Iowa City. During the year twelve persons received the pasteur treatment for rabies, 165 were inoculated against typhoid fever, and seventy-six received smallpox vaccination, and 1,971 water analyses were made.

Personal.—Drs. Henry Matthey and Walter Matthey, Davenport, who have been indicted for conspiracy against the government, have been released on a $2,000 bond.——Dr. Frederick H. Lamb, Davenport, pathologist to the Marshalltown Hospital, was the guest of honor at a banquet given by thirty physicians of the city, August 8, and at the conclusion Dr. Kuno H. Struck, Davenport, on behalf of the physicians, presented Dr. Lamb with a revolver.——Dr. David J. Chinn, Bettendorf, is convalescent after more than two months' illness with septicemia.——Dr. J. R. Martin, Iowa City, has resigned as assistant surgeon of the Marshalltown Soldiers' Home, and has been succeeded by Dr. George A. Mershon, Mobile, Ala., formerly of Liscomb, Iowa.

KANSAS

Hospital News.—The Arkansas City Hospital has closed its doors for the present on account of the absence of Dr. R. Claude Young at the training camp, Fort Riley.

State Board Election.—Dr. George M. Gray, Kansas City, has been reelected president of the State Board of Medical Examiners, and Dr. Henry A. Dykes, Lebanon, has been reelected secretary for a fourth term.

New Ambulance Company.—Red Cross Ambulance Company No. 44, Topeka, has been organized at Washburn University, and its personnel is composed chiefly of students of this institution. Dr. Charles H. Lerrigo is in command of the company.

Typhoid in Leavenworth.—During the first six months of this year, Leavenworth had more than half the total number of cases of typhoid fever reported in all cities of first class in the state, and July 30, there were twenty-five cases of the disease in the city. Dr. William Prebble and Sanitary Engineer J. S. Stredor, U. S. P. H. S., arrived in Leavenworth, August 5, to assist city physicians, Charles J. McGee and Jacob L. Everhardy, in tracing the source of the typhoid fever. During the week ending July 28, seventeen new cases were reported.

Personal.—The Topeka Chapter of the American Red Cross has offered, through Dr. William F. Bowen, a base hospital unit.——Dr. Oliver D. Walker has been reelected president of the Salina board of education.——Dr. John F. Coffman, Jr., Marion, has been commissioned first lieutenant, M. C., Kan. N. G., and assigned to duty with the Third Infantry.——Dr. William S. Yates has been elected president of the board of education of Junction City.——Dr. Alexander J. Jeffrey, Topeka, has returned after six months' service in an English base hospital near London.——Dr. Henry A. Nave, Kansas City, has been judged insane, and committed to the State Hospital, Topeka.

MARYLAND

Infantile Paralysis.—Three new cases of infantile paralysis have been reported to the state board of health from Cumberland.

Eastern Shore Election.—The recently organized Eastern Shore Medical Society has elected Dr. J. McFadden Dick, Salisbury, president, and Dr. Eldrige E. Wolff, Cambridge, secretary-treasurer.

Dr. Dunton's Plan for Maimed Soldiers.—In a talk before the Rotary Club during a luncheon at the Hotel Rennert, August 14, Dr. William Rush Dunton, Jr., Towson, showed how maimed soldiers can be made useful citizens on their return from France. His subject was "Occupational Therapy" or the work cure, which is recognized as the best single treatment for mental and functional disorders, particularly those resulting from shell shock. Conversion of the physically or mentally crippled soldier, invalided back home from the front, into an economic asset, instead of allowing him to become a very definite liability, was the problem under discussion. Part of the problem is enlistment of the interest and cooperation of employers of men for engaging cripples and "part-time" workers in jobs for which they can be adequately fitted. Among Dr. Dunton's suggestions were the employment of two "part-time" workers in the factories or plants for half a day each in cases in which one would break down under the strain of an all-day job; the employment by the city of one-armed men, physically sound otherwise, as traffic cops, the employment by dentists of deaf, one-armed, one-eyed, one-legged men—in extreme cases—for the job of cleaning patients' teeth preliminary to examination by the dentist, and giving home work to legless men, or perhaps teaching them stenography and typewriting for office work. A staff of consulting physicians is already being gathered tentatively for the purpose of determining what work certain cripples could do best by testing out their mental and physical abilities. Teachers in technical schools will be asked to aid in instruction of crippled soldiers mentally capable of being educated for technical positions, and the possibility was pointed out that a man too crippled to dig ditches or handle a saw could be taught to become construction boss.

NEW YORK

New York City

Personal.—Dr. Aristine P. Munn-Recht has been appointed the first dean of women at New York University.——Rear Admiral Charles F. Stokes, N. S. Navy, retired, has resigned the position of director of the Warwick Farm for Drug Addicts.

Memorial Hospital for Brooklyn.—Plans have been prepared and application has been made to the state board of charities for a hospital to be built as a memorial to Carson C. Peck, formerly vice president of the F. W. Woolworth Company, and owner of the Brooklyn *Times*. The hospital is to occupy a site bounded by Albany and Troy avenues, and Crown and Montgomery streets, Brooklyn. It is aimed to make it like a comfortable hotel, with the hospital features kept as far in the background as possible.

Venereal Clinics for Queens.—The department of health, pursuant to its policy of extending its campaign against venereal diseases, has established venereal advisory clinics in each of the four health centers of Queens. The medical advisor will consult only with those applicants who are not under the care of a physician, and who come to the health department seeking advice. Under no circumstances will patients be interviewed who are sent by physicians or private institutions for the Wassermann and complement fixation tests, unless requests for advice by the physicians or institutions sending the patients. All applicants are given a circular of information regarding venereal diseases, and a card of instructions regarding syphilis and gonorrhea.

New Law Relating to Medical Advertisements.—The Public Health Education Bureau of the department of health calls

special attention to the new law relating to certain medical advertisements which was enacted at the last session of the legislature. The passage of the law was prompted by the fact that misrepresentation practiced by quacks and unscrupulous nostrum manufacturers constituted one of the chief obstacles encountered by health authorities in dealing with venereal diseases. Much of this misrepresentation appears in the advertisements still carried by certain newspapers and periodicals published in this city. The new law designed to reach these offenders goes into effect September 1, and applies to both the advertiser ("who causes to be published") and to the publisher of this class of advertisements.

Rockefeller War Hospital Formally Opened.—July 12, the heads of the medical departments of the United States government and their staffs, and a large number of Army and Medical Reserve officers, inspected the new Rockefeller Demonstration Hospital, and the occasion was made the formal opening of the hospital. Dr. Simon Flexner described the work that the hospital expected to do, and Dr. Alexis Carrel and others made brief addresses and gave demonstrations. It was stated that the serum for gangrene announced some time ago had reached a stage of development where it could be used on human beings. The visitors also inspected the Columbia University War Hospital, which differs from the Rockefeller Hospital in that the former is primarily for the treatment of the wounded, while the latter is for demonstration work for physicians.

NORTH CAROLINA

Ophthalmia Prevention.—The state board of health is distributing to all physicians and midwives ampules of a 1 per cent. silver nitrate solution to be used in the prevention of blindness, in compliance with a recent statute enacted by the legislature.

Reporting of Communicable Diseases.—Since August 1, the state board of health, with a competent epidemiologist devoting his whole time to this department, has been enforcing the new statute providing stringent regulations and the reporting of whooping cough, measles, scarlet fever, typhoid fever, bubonic plague, smallpox, typhus fever, yellow fever, diphtheria, infantile paralysis, Asiatic cholera and cerebrospinal meningitis. The board fully realizes the necessity of cordial cooperation of the physicians in securing the beneficent effects of the new law, and their friendly aid has been invited in a special letter to each practitioner.

OKLAHOMA

Personal.—Dr. James J. Williams, Clinton, has been elected president of the state medical board.——Dr. Frederick R. Sutton, Bartlesville, is reported to be critically ill.

License Revoked.—Word was received from Oklahoma City, July 18, that the State Board of Medical Examiners has revoked the license of Dr. Thomas E. Shepherd, Tulsa, charged with having performed a criminal operation on Miss Loyce Smith, in May, which resulted in her death.

Laboratory to Be in State Hospital.—The governor has decided against placing the state health laboratory in the suite of rooms occupied by the health department in the capitol. The laboratory therefore will probably remain in Guthrie until the new state hospital is ready for occupancy.

National Corps Appointments.—The following medical officers have passed the examination of the military board: Major Hugh Scott and Lieut. Ralph Mavity, Field Hospital, Oklahoma City; Capt. Hector G. La Reau and Lieut. J. M. Ferguson, Ambulance Corps, Tulsa; Lieuts. D. S. Graham, W. P. Fite and John Kay, Regimental Infirmary, Fort Sill.

OREGON

New Medical Unit.—Under the auspices of the University of Oregon Medical Department, a new unit is being recruited for a base hospital under the regulations of the American Red Cross.

Personal.—Dr. Robert Pilkington, Astoria, has been confined to the house for a week on account of septicemia due to a wound of the thumb.——Dr. Ernest A. Sommer, Portland, who was thrown from a horse at Lummie Island, August 1, fracturing his clavicle, is reported to be doing well.——Dr. Claude P. Fryer, Independence, has been appointed bacteriologist in charge of the Tampa laboratory of the Florida State Board of Health.——Dr. Ralph C. Matson, Portland, is convalescent after an operation for appendicitis.

PENNSYLVANIA

Philadelphia

Methodist Hospital Unit Nearly Complete.—With the exception of three reserve nurses, the naval hospital unit of the Methodist Hospital is complete.

Personal.—Dr. Charles R. Turner has been appointed dean of the Thomas W. Evans Dental Institute of the University of Pennsylvania, to succeed Dr. Edward C. Kirk, who resigned last June.

Three Ambulances for Red Cross.—The students of the Friends' Central School have raised sufficient funds to purchase three ambulances, which recently were presented to the Red Cross. The chassis were purchased from the Ford Automobile Company. The J. G. Brill Company, Philadelphia, built the bodies in accordance with specified regulation trench ambulances now being used in France.

City to Treat Teeth of Rejected Men.—The city has thrown open its Dental Dispensary City Hall for the free treatment of the teeth of men who have been drafted or have volunteered for the Army, and have been rejected because of defective teeth. Dr. Edwin S. Mershon, chief of the dispensary, has asked Dr. Krusen, director of health and charities, to increase the staff of dental surgeons and to keep the dispensary open until late in the evining, if necessary. He also made arrangements with the Dental Preparedness League, whereby each member agrees to treat one soldier free.

VIRGINIA

State Admitted to Birth Registration Area.—August 8, Virginia was admitted as the first southern state to the birth registration area of the United States, which includes only those states in which public health work in general, and vital statistics in particular, have reached the grade of proficiency that make the figures compiled reasonably accurate. This decision was made after a searching investigation of the vital statistic records of the state by special agents of the Census Bureau.

Hospital News.—The Riverside Hospital, Newport News, has purchased a nurses' home in order that the third floor of the hospital may be used wholly for hospital purposes. The home, with the changes and improvements required, will cost $10,000.——The Medical College of Virginia Memorial Hospital, Richmond, has been authorized to proceed with the erection of a three-story brick hospital building which is to be a part of the new group of the Memorial Hospital. This building will be the contagious pavilion, and will cost about $40,000. It has been donated to the institution by Major James H. Dooley.

WASHINGTON

Medical Corps Assignment.—Lieuts. Robert N. Hamblen and Max R. Charlton, Spokane, have been assigned to duty with Field Hospital No. 30.——Lieut. Arvid Anderson has been transferred from the Eighteenth Infantry to Field Hospital No. 30.

Returns from Russian Mission.—Dr. Eugene D. Hurd, Seattle, who accompanied the American Mission to Russia, returned, August 3. Dr. Hurd holds the commission of colonel in the medical corps of the Russian army, and has had two years of service in the Galician and Carpathian campaigns.

Tuberculosis Foes Meet.—At the annual meeting of the Washington Association for the Prevention and Relief of Tuberculosis, held in Tacoma, July 27, the following officers were elected: president, Dr. Christen Quevli (reelected); vice presidents, Drs. Clarence A. Smith, Seattle, and Mrs. R. C. McCredie, Sunnyside; executive secretary, Mrs. Beth B. Buchanan, Seattle (reelected), and executive treasurer, J. A. B. Smith, Seattle (reelected). The proceedings of the meeting concluded with the dedication of the Children's Pavilion at the Mountain View Sanatorium. The building will be ready for occupancy this month, and will have accommodation for thirty patients.

WEST VIRGINIA

Sanatorium Opened.—The View Point Sanatorium of the Ohio County Anti-Tuberculosis Society was formally reopened, August 6. The institution will be able to care for about thirty patients.

Personal.—Dr. William C. Etzler has resigned as health commissioner of Wheeling, and has been succeeded by Dr. Mayes B. Williams.——Dr. Martin R. Casey, Weston, has

been appointed a member of the medical staff of the Weston State Hospital.

Sanatorium Board Named.—The governor has named the following commission of colored practitioners to locate the proposed State Tuberculosis Sanatorium for Colored People: Drs. Augustus L. Critchlow, Charleston; Roscoe C. Harrison, Kimball, and Henry F. Clay, Louisville.

New Board Members.—Governor Cornwell of West Virginia has appointed Drs. Vincent T. Churchman, Charleston; H. Luther Clark, Kyle, and Hubert E. Gaynor, Parkersburg, as members of the public health council in place of Drs. W. William Golden, Elkins; William J. Davidson, Parkersburg, and Joseph E. Robins, Charleston, whose terms had expired. The public health council has in charge the licensing of physicians in West Virginia.

WISCONSIN

Trachoma Should Be Reported.—Health Commissioner Ruhland of Milwaukee is making a strenuous effort to induce state authorities to include trachoma among the reportable communicable diseases. This has already been done in New York, Ohio, Massachusetts, Pennsylvania, Kansas and Louisiana.

Personal.—Dr. William H. Schnell, Superior, has been appointed junior local surgeon for the Minneapolis, St. Paul and Sault Ste. Marie Railway at Superior.——Dr. Isaac G. Babcock, Cumberland, who has been seriously ill with diphtheria, is reported to be improving.——Dr. Charles H. Van Hise, Madison, has been elected the university member of the state board of education, succeeding Lieut.-Col. Gilbert E. Seaman, Milwaukee, chief surgeon of Wisconsin.

GENERAL

Diploma Stolen.—Dr. Wilbur Kenneth Brown, at present employed at Barnes Hospital, St. Louis, reports that his diploma, issued by the Washington University Medical School, June 14, 1917, has mysteriously disappeared. He believes it has been stolen. Licensing boards should, therefore, be on the lookout for it.

Change of Meeting Place.—The annual meeting of the American Public Health Association, which was to have been held in New Orleans in December, will be held in Washington by direction of the executive committee. The reason for this change is said to be because war hygiene will be the central theme of discussion, and Washington is the city of all others where information regarding the sanitary problems of armies is being concentrated.

Antituberculosis Work Grows.—In summarizing the work of the state legislatures during their last session, the National Association for the Study and Prevention of Tuberculosis finds that thirty-eight legislatures enacted antituberculosis laws, and fourteen passed laws relating to county tuberculosis hospitals. The legislatures of Alaska, Arizona, New Mexico, Porto Rico, Utah, Hawaii and Nevada failed to take action in this direction.

Guard Germs with Care.—Hospitals, medical colleges and laboratories throughout the country have been requested by Surg.-Gen. Rupert Blue, U. S. P. H. S., to inform him at once if they maintain cultures of anthrax, tetanus, diphtheria, bubonic plague, Asiatic cholera, tuberculosis, typhoid fever, paratyphoid fever, and related organisms, and stating that none of these cultures should be given out, excepting to physicians who can be personally vouched for.

Bequests and Donations.—The following bequests and donations have recently been announced:

Johns Hopkins Hospital, Baltimore, $300,000, and New York Hospital, residuary legatee of the estate of James Buchanan Brady.

St. Agnes' Hospital, Philadelphia, $500; St. Joseph's Hospital, Philadelphia, and two other Catholic charities, one-fourth of the remainder of the estate of Ellen McCabe on the death of her sister.

St. Vincent's Home and Maternity Hospital, Philadelphia, $5,000, by the will of Ella L. Lane, and $500 by the will of Rose McClinchey.

Mount Sinai Hospital and Montefiore Home and Hospital, New York, and Zion Home, Buffalo, each $1,000, by the will of Norbert Gunsburger.

Death of Roumanian Ophthalmologist in This Country.—G. Stanculeanu, professor of ophthalmology at the University of Bucharest until the German invasion, who has been lecturing in this country in the interest of the Roumanian government, died recently at a sanatorium at Stamford, Conn., of pneumonia. Dr. Stanculeanu arrived in New York two or three months ago, and suffered a nervous breakdown. When the Germans invaded Roumania he and his wife fled, leaving behind all their property except what they could carry in a handbag. Later they were sent to America on a mission by the Roumanian government.

FOREIGN

Meningitis in London.—The *British Medical Journal* states that in London, from January 1 to June 16, there have been 307 cases reported of cerebrospinal meningitis, including ten military cases, with 164 deaths. The corresponding figure for last year was 295 cases.

Deaths in the Profession Abroad.—Lieut.-Col. **A. W. D. Leaky,** retired, London.——Lieut. **A. Atkinson,** London, aged 57.——**J. P. Steele** of Rome and Florence, retired, the Italian correspondent of the *Lancet*, aged 81.——Capt. **I. Macfarlane,** before the war for several years a medical missionary in Palestine, of late in charge of a typhus isolation camp in Egypt, died of typhus in July.——**C. Bourdillon,** Marseilles.——Major **L. Augier,** Evaux-les-Bains.——**F. Le Corre,** Angers. From recent casualty lists: British: **E. S. Calthrop;** Lieut.-Col. **F. J. C. Heffernan;** Major **J. Aitken;** Lieut. **J. S. Munro;** Lieut. **S. C. Ellison;** Major **R. C. Tweedy;** Capt. **F. A. Deravin,** Australian A. M. C. French: **J. Lecerf;** Capt. **F. Belmont; M. Bergoend.**

Santos Fernandez' Seventieth Birthday.—The scientific societies of Cuba recently joined to present a gold souvenir medal and parchment to Dr. Juan Santos Fernandez of Havana on the occasion of his seventieth birthday. The Academia de Ciencias, of which he is president, devoted a special meeting to the ceremony of presentation. Santos Fernandez has always taken a prominent part in promoting the progress of medicine and of the profession in Cuba, and especially the progress of his specialty, ophthalmology. He has never occupied an official position, but his numerous works on ophthalmologic and public health subjects have carried his name far. It is said that he has presented more than a thousand communications at meetings of different scientific organizations.

PARIS LETTER

PARIS, July 26, 1917.

The War

TREATMENT OF PENETRATING ABDOMINAL WOUNDS IN THE HOSPITALS AT THE FRONT

Dr. Quénu, professor of the surgical clinic at the Faculté de médecine de Paris, in reference to several communications on penetrating abdominal wounds which have been addressed to him by surgeons operating with the advance formations at the front, affirms that at the present time the cause of laparotomy in the treatment of abdominal war wounds appears to be definitely won. A number of questions connected with it remain to be decided: (1) the indications for operation; (2) the operative technic, and (3) the transport of the wounded.

1. The indications for operation are based on the probability of an abdominal penetration, but this probability cannot always be established by a study of the symptoms, since, for the first few hours, these may be effaced. Even the sign of the contracture, though localized, may be lacking. One must not be deceived by the fact that the clinical picture is temporarily benign, and it is important to verify the penetration or the nonpenetration by a direct examination of the wound, if this is, in any way, possible. It should also be remembered that wounds some distance away from the abdomen may be the ports of entry for abdominal lesions. While the probability of a penetration should point toward an operation, the general condition of the patient must always be considered. Dr. Rouvillois, in 116 cases of penetrating visceral wounds, abstained from an operation because the general condition was so precarious that any intervention would have been unpardonable. In this connection, one must attribute great importance to a pulse that is so weak as to be scarcely perceptible, and also to any considerable lowering of the blood pressure.

2. The operative technic seems to have made great progress. The systematic examination of all the organs in the path of the projectile must be scrupulously performed, but the mode of procedure is not so evident. Depage practices total evisceration *en bloc*, following this up with copious irrigations of warm serum. Other surgeons, most of them, in fact, proceed differently. They make an incision in the abdomen, noting that the wounded loops of intestine have a tendency to present themselves first in the wound. The wounded coils are first taken up and repaired, which does not prevent proceeding to a complete evisceration, provided the condition

of the intestine requires it. The latter technic appears preferable to Depage's, since it seems to expose the patient less to the danger of shock, and would appear to be just as certain in its results. What attitude should be taken toward lavage of the intestine and of the abdominal cavity? That one should irrigate copiously the coils touched and infected by the traumatism; that one should even perform a lavage of the abdominal cavity with warm serum when the whole abdominal cavity is infected and there appears to be no other way of cleansing it, is all very well; but, when the infection is localized, the lavage appears to be fraught with danger, and to tend to diffuse infection.

3. The question as to the conditions under which the wounded can be best transported is a very important one. So much is certain, namely, that the ideal condition would be, not to have to transport the wounded at all, but to operate on them a few hundred yards from the point where they fall. It is incontestable that the best statistical results have been obtained by the surgeons who, by reason of the peculiar circumstances under which they were working, have been able to approach these conditions. Here arises the great controversial question of the forward first-aid stations. Quénu regards the advance first-aid station as an excellent creation in a war in which a high degree of stabilization is possible; also under certain conditions of natural protection offered by the peculiar topography of the country. The organization of the advance first-aid stations requires a great deal of time and labor, and the returns are hardly adequate. In this branch of the medical service the conditions of evacuation are often uncertain. It is, in short, a very peculiar part of the service. In a campaign in which the movements of the contending forces cover a large territory, safety for the first-aid corps can be found only in a chance protection, which is sometimes afforded by the physical features of the country, sometimes by a building erected by the hand of man; or, what is much more common, by remaining at a distance from the firing line. In view of these facts, the motor hospital ambulances with their perfect technical equipment and their details of expert surgeons were called in to strengthen the service. In actual practice, however, these ambulances, which were created especially in order to meet the need of first aid and to treat particularly abdominal wounds, have been located sometimes 7 miles, sometimes from 15 to 20 miles, distant. When they have been placed only 7 miles away, they have been able to do good abdominal surgery; but when much farther removed they have been handicapped, and on one tour of inspection Quénu observed that some of these units did not receive any wounds of the small intestines, while others received them only after they had become inoperable. Perhaps it would be advisable to return to automobile units less unwieldy than the present ones—that would be able to operate at a distance of 6 or 7 miles from the firing line. A better method of transporting the wounded from the firing line to the ambulance should be devised so that the jolting and shaking which affects so seriously men suffering from abdominal wounds, might be reduced to a minimum. Any improvement brought about in the method of transportation, the modes of suspension, etc., would be of advantage also to the wounded of other classes, even though the improvement has not for them the same essential importance.

ANESTHESIA AND ANESTHETICS IN WAR SURGERY

Dr. Bilhaut, surgeon of the Hôpital International de Paris, has addressed a communication to the Société de pathologie comparée on the subject of general and local anesthesia in war surgery. He accords the preference to chloroform. He finds chloroform easier to administer than ether and less likely than ether to cause a chilling of the respiratory tract, such as may produce pneumonia or pulmonary congestions. In 812 important operations performed by Bilhaut there were no unhappy results from the use of chloroform. The reaction on the liver has been found negligible. In case an operation may require some time, the surgeon should have recourse to general anesthesia. During the course of an operation it is deplorable to have to substitute narcosis for local anesthesia. Therefore, from the very outset, the surgeon should make a definite choice, and in case of doubt he should decide in favor of general anesthesia. In skeletal lesions, which are so frequent, general anesthesia is indispensable. Long bone resections and the removal of bone splinters should be undertaken with scrupulous care, even down to the minutest details, in order to preserve the periosteum, as the significant experiments of Professor Ollier have proved. Without general anesthesia, one cannot bring to a satisfactory conclusion this extremely delicate work, which is indispensable in order to secure anything like complete restorations. It is only by proceeding thus that Bilhaut has obtained in his war surgery the complete reparation, without shortening (real or apparent), of extensive losses of substance in the long bones. Local anesthesia (cocain, stovain, novocain, freezing) should be confined strictly to minor operations of short duration.

Dr. Fiessinger has called attention to the fact that the results obtained by Bilhaut seem to prove that the operations performed on soldiers under war conditions give better results than in times of peace. It seems as if the new conditions created by the war have brought about an increase in the potency of organic defense. Under ordinary conditions it seems that ether might possibly be superior as an anesthetic to chloroform, since it does not cause alterations of the hepatic cells; however, it would appear from the communication of Bilhaut that, under the existing conditions, chloroform has lost part of its injurious properties.

THE MORE REMOTE FUNCTIONAL RESULTS FROM THE RESECTION OF THE KNEE IN TREATING WAR WOUNDS

At one of the recent meetings of the Société de chirurgie de Paris, Dr. Bégouin of Bordeaux presented a communication on this subject. He has had an opportunity of examining about one hundred resections of the knee, and has preserved notes on seventy-seven of these. In these operations he affirms that, generally speaking, the functional results were excellent, leaving the leg perfectly utilizable for walking and standing, which constitute its essential function. Only in fifteen cases were the results distinctly bad. In order to obtain in resection of the knee such results as shall justify its being considered an excellent operation, two conditions are required: (1) an exact operative technic, at least as regards the ablation of a thin slice of bone which removes at the same time the cartilage from the end of the tibia and the femur, a bony ankylosis being the object desired from the resection of the knee, which cannot be brought about if a cartilaginous covering is left on either of the two bones; (2) a prolonged postoperative surveillance in order to maintain an immobilization of the member in extension, with the bony surfaces in close contact until the bony ankylosis is complete. These are the two essential conditions of success, but it is well to make this emphatic, for the neglect of these points is the cause of the failures observed by Bégouin: incomplete resection; lack of care in maintaining the bony surfaces in juxtaposition, allowing one bone to slip past the other with the consequent deviation of the lower leg, and the poor support of the foot.

Marriages

LIEUT. ELIAS CECIL FISCHBEIN, M. R. C., U. S. Army, to Miss Florence Givens Smith, both of Sonyea, N. Y., at Rochester, N. Y., August 8.

JOSEPH EMIL ARTIGUÉS, M.D., San Francisco, to Mrs. Noelie Morcel of Constantinople, Turkey, at San Francisco, July 30.

LIEUT. SAMUEL JAFFE, M. R. C., U. S. Army, Norristown, Pa., to Miss Lily Bailey of Alliance, N. J., in New York, July 7.

CHESTER D. SEWALL, M.D., San Francisco, to Miss Vernie L. Gregory of Redding, Calif., at Castle Rock, Calif., August 4.

CAPT. JULIAN MAST WOLFSOHN, M. R. C., U. S. Army, San Francisco, to Miss Ethel Liebes of London, England, July 25.

LIEUT. ROBERT PARVIN WILLIAMS, M. C., U. S. Army, to Miss Barbara Rebecca Murray, at Douglas, Ariz., July 21.

LIEUT. JAMES STEINBERG, M. R. C., U. S. Army, Los Angeles, to Miss Helen Marie Jonas of Hollywood, Calif., July 29.

ASST. SURG. HUGH JOHN DUFFY, U. S. Navy, Chicago, to Miss Jessie Sullivan of Denver, at Chicago, August 9.

EDMUND MCCOLLAM CONNELY, M.D., to Miss Frances Rocker Bisland, both of New York, July 21.

AARON SAMUEL TORRENS, M.D., to Miss Myrtle Myra McClarkin, both of Portland, Ore., June 27.

LIEUT. CLARENCE STILES MCKEE, M. R. C., U. S. Army, to Miss Edna Stiles of New York, August 4.

PHILIP JOHN TRENTZSCH, M.D., Rives, Tenn., to Miss Velma O. Schmitt of Dodgeville, Wis., July 31.

ISADORE EMIL COHN, M.D., to Miss Dolly Newman, both of Chicago, recently.

Deaths

Walter Hawthorne Rowan, M.D., Jackson, Miss.; Memphis (Tenn.) Hospital Medical College, 1902; aged 42; formerly a Fellow of the American Medical Association; state sanitary inspector for Mississippi from 1912 to 1914, later appointed by the International Sanitary Commission as director of sanitation work in Guatemala, and since that time and until recently superintendent of the Mississippi Tuberculosis Sanatorium, Magee; one of the leading sanitarians and hygienists of the South; died, August 7, at a hospital in Jackson.

Frederick Walter Smith, M.D., Syracuse, N. Y.; New York University, New York, 1881; aged 58; a Fellow of the American Medical Association; a member of the American Public Health Association; health commissioner of Syracuse from 1891 to 1897, and health officer of the city since 1902; a member of the state board of health from 1895 to 1901; coroner of Onondaga County for several years; obstetrician to St. Joseph's Hospital; died at his home, July 31, from cerebral hemorrhage.

Charles Boyd Kelsey, M.D., New York, College of Physicians and Surgeons in the City of New York, 1873; aged 66; formerly a member of the Medical Society of the State of New York; assistant demonstrator of anatomy in his alma mater, from 1874 to 1879; professor of diseases of the rectum in the University of Vermont, Burlington, in 1889 and 1890, and since 1890 occupying the same chair in the New York Post-Graduate School; a specialist in proctology and author of several works on that subject; died at his home, August 4.

Major Charles Clarence Billingslea, M. C., U. S. Army; University of Maryland, Baltimore, 1900; aged 39; a Fellow of the American Medical Association, who entered the Medical Corps, June 2, 1902, was made captain five years later, and was promoted to major in May, 1915; in charge of the sanitation work at Camp Meade, Annapolis Junction, Md.; was found dead in his tent at the cantonment camp, August 16, from the effects of an accidental gunshot wound of the head.

Walter D. Greene, M.D., Buffalo; University of Buffalo, N. Y., 1876; aged 64; a Fellow of the American Medical Association, and a member of the American Public Health Association; formerly president of the Medical Society of the State of New York; clinical professor of genito-urinary diseases in his alma mater; surgeon to the Erie County and Buffalo hospitals; for five years health commissioner of the city; died at the home of his brother at West Falls, August 3, from heart disease.

Ira Irving Nicol, M.D., Mason City, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1895; aged 66; formerly a member of the Iowa State Medical Society; for thirteen years surgeon for the Milwaukee System at North English, Iowa, and editor of the North English *Record;* for two years surgeon for the Northwestern System at Mason City; died at his home, August 4, from cerebral hemorrhage.

David Ben Bentley, M.D., Sarnia, Ont.; Trinity Medical College, Toronto, 1890; aged 52; an officer of the Canadian Army Corps and a member of the first unit to go abroad; died in Ramsgate, England, April 5, after two and one-half years of service in France and England, from pneumonia complicating nephritis.

William A. Keegan, M.D., Rochester, N. Y.; Chicago Homeopathic Medical College, 1888; aged 55; for many years visiting surgeon to the Homeopathic Hospital, Rochester, and at one time president of the staff; a member of the Medical Society of the State of New York; died at his home, August 8, from angina pectoris.

Dwight Gordon Smith, M.D., Washington, D. C.; George Washington University, Washington, D. C., 1903; aged 44; a Fellow of the American Medical Association; for twelve years a member of the staff of the Emergency and Children's hospitals, Washington; died in the Emergency Hospital, July 31.

Harvin C. Moore, M.D., Houston, Texas; Tulane University, New Orleans, 1898; aged 42; a member of the State Medical Association of Texas, and once president of the Harris County Medical Society; died in a sanatorium in Houston, August 7, ten days after an operation for appendicitis.

John Hamilton Potter Hodgson, M.D., New York; University of Virginia, Charlottesville, 1888; College of Physicians and Surgeons in the City of New York, 1889; a member of the Medical Society of the State of New York; died at his summer home, on Muskoka Lake, Ont., August 4, from heart disease.

Floyd B. Olney, M.D., Fort Dodge, Iowa; Hahnemann Medical College, Chicago, 1881; aged 66; a member of the Iowa State Medical Society; was instantly killed, August 8, when his automobile was struck by an Illinois Central passenger train on a grade crossing near Pomeroy, Iowa.

Homer H. Warner, M.D., New York; University of Vermont, Burlington, 1869; aged 79; formerly medical officer of the New York Fire Patrol; surgeon of the First Massachusetts Volunteer Cavalry during the Civil War; died at his home, August 12, from nephritis.

David M. Taylor, M.D., Garrison, Tex.; Memphis (Tenn.) Hospital Medical College, 1902; aged 40; formerly a member of the State Medical Association of Texas; died in the Whiteside Sanatorium, Timpson, Texas, August 2, after an operation for appendicitis.

John Hobson Womack, M.D., Catham, Va.; University College of Richmond, 1901; aged 48; formerly a Fellow of the American Medical Association; a member of the Medical Society of Virginia; died in the Danville (Va.) Hospital, May 5, from nephritis.

Marx Stecher Wiesen, M.D., Philadelphia; Medico-Chirurgical College of Philadelphia, 1914; aged 26; died in St. Agnes' Hospital, Philadelphia, July 31, from the effects of a gunshot wound of the chest, received in a fight with a burglar, July 12.

Frances Tudor Weed, M.D., Los Angeles; University of Michigan, Ann Arbor, 1895; aged 58; formerly deputy health officer of Grand Rapids, Mich.; while crossing a street in Los Angeles, August 3, was crushed between street cars and instantly killed.

Stephen T. Lea, M.D., Holly Hill, S. C.; Medical College of the State of South Carolina, Charleston, 1877; aged 61; formerly a member of the South Carolina Medical Association; died suddenly at his home, August 2, from acute gastritis.

Warren Lawton Whitmore, M.D., New Haven, N. Y.; Syracuse (N. Y.) University, 1895; aged 47; formerly a member of the Medical Society of the State of New York; died at his home, June 12, from cerebral hemorrhage.

Ernest M. Sellards, M.D., Ashland, Ky.; Kentucky School of Medicine, Louisville, 1893; aged 45; a member of the Kentucky State Medical Association; died at his home, August 4, from meningitis following an attack of rheumatism.

Marion D. Snyder, M.D., Dunmore, Pa.; Jefferson Medical College, 1896; aged 46; formerly a member of the Medical Society of the State of Pennsylvania; died at his home, May 27, from pernicious anemia.

Frederica R. Baker, M.D., Chicago; Hahnemann Medical College, Chicago, 1895; aged 52; formerly a member of the Illinois State Medical Society; died at her summer home, near Peacock, Mich., August 7.

Charles Sumner Hitchcock, M.D., Toledo, Ohio; Physio-Medical College of Indiana, Indianapolis, 1890; aged 51; a Fellow of the American Medical Association; died at his home, August 7, from neuritis.

Eugene Francois Marguerat, M.D., Chicago; Rush Medical College, 1895; aged 47; a member of the Illinois State Medical Society; died at his home in Chicago, August 9, from chronic gastro-enteritis.

Hubbard L. Gillette, M.D., Washington, D. C.; Baltimore Medical College, 1889; aged 68; a member of the Medical Society of the District of Columbia; died at his home, May 12, from uremia.

Jacob J. Frankel, M.D., Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; aged 46; a Fellow of the American Medical Association; died in his office, recently, from heat prostration.

James Arthur Ross, M.D., Barrie, Ont., University of Toronto, Ont., 1889; L.R.C.P., L.R.C.S. (Edin.); L.R.S.P.&S. (Glas.), 1892; aged 50; died at his home, May 1, from pernicious anemia

Frederick Theodore Harpel, M.D., Shamokin, Pa.; Hahnemann Medical College, Philadelphia, 1900; aged 41; died in the Coshocton (Ohio) Sanitarium, about August 1, from heart disease.

Andrew Barclay Mercer, M.D., Alexandria, Ind.; University of Michigan, Ann Arbor, 1884; aged 63; died at his country home near Alexandria, August 7, from cerebral hemorrhage.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SOME MISCELLANEOUS NOSTRUMS

S. S. S.—"Swift's Sure Specific," according to the manufacturer, is "made from purely vegetable ingredients." The only real information that the manufacturer gives regarding its composition is that which the government compels, namely, the alcohol-content—15 per cent. The dose recommended is from one to two tablespoonfuls four times a day. The Swift Specific Company claims that this "imparts just the slight exhilaration that nearly all women find beneficial." As the alcohol-content of S. S. S. is nearly one-third of that of raw whisky, a woman taking eight tablespoonfuls (4 ounces) of this preparation daily, would be getting the alcohol equivalent of more than one bottle of beer every day.

S. S. S. is sold under the claim, either direct or inferential, that it will cure syphilis ("blood poison"). In a booklet issued some time ago the Swift Specific Company, discussing secondary syphilis, said:

"Until the discovery of S. S. S., no remedy was known that could completely wipe out the disease and restore the sufferer to health . . . but S. S. S. clears out the whole thing, root and branch, and leaves the physical organism of the patient unimpaired."

S. S. S. is not only a certain cure for Syphilis but is the one absolutely safe remedy. It contains no strong minerals to damage the system, but is made entirely of roots, herbs and barks of healing, cleansing nature.

We offer $1.000 for proof that S.S.S. contains a particle of mineral in any form.

THE SWIFT SPECIFIC CO., ATLANTA, GA.

A page from one of the older booklets sent out by the Swift Specific Company. At that time the concern made no secret of the claim that S. S. S. was offered as "the one absolutely safe" and "certain cure for syphilis."

In the same booklet, under tertiary syphilis, it was said:

"In tertiary Syphilis . . . S. S. S. acts with amazing effect and rarely ever fails to produce a complete cure . . . many cases, the most malignant, the most virulent, the most hopeless have been cured by S. S. S."

In a personal letter written some time ago to a victim of syphilis the "medical advisor" of the Swift Specific Company wrote, in part:

"We regret to know that you are suffering from Syphilis. Syphilis is a blood disease and the only way to cure it permanently is to cleanse the blood from all impurities and there is nothing that will purify your blood more thoroughly and quicker than S. S. S. We advise you to continue taking S. S. S. regularly. . . . It is decidedly the best thing you can take. . . . It will cure you in less time that any other remedy and the cure will be permanent. In S. S. S. we have the only vegetable antidote to syphilis that has ever been discovered. . . ."

In another letter the company said:

"For more than forty years S. S. S. has been recognized as the one remedy for Syphilis. Thousands upon thousands have been cured through its use. . . ."

In a booklet accompanying the previous letter the statement was printed in large, black-faced type:

"S. S. S. is not only a certain cure for syphilis but is the one absolutely safe remedy."

Because the better class of newspapers are recognizing that there is no possible justification for the sale of an alleged remedy for the self-treatment of so serious a disease as syphilis—a menace alike to the individual and community—the newspaper advertisements of S. S. S. no longer feature the alleged curative values of the preparation in syphilis. It is now "rheumatism" and "impure blood." The purchaser of S. S. S., however, is urged to write for the "Special Book on the Blood" which "covers all forms of blood impurities" and "goes deeply into the subject of mercury, iodid of potash, arsenic and other mineral drugs." The booklet purports to "enable one to properly treat syphilis under the use of S. S. S. together with such medical advice as we give gratis by correspondence." It further states that the treatment of syphilis "is a simple matter."

To sell such a mixture as S. S. S. as a cure for a disease like syphilis is much on a par with selling a simple gargle as a "cure" for diphtheria.

Kaufmann's Sulphur Bitters.—This preparation was marketed by A. P. Ordway & Co. of New York, which was the trade name of Aaron P. Ordway. According to the label, the product has the following formula:

"Sublimed Sulphur (triturated), 2 gr. Gentianae Radix 31 gr. Prunes Virginiana 31 gr. Aloe Socotrina 19 gr. Eupatorium 16 gr. Tanacetum 6 gr. Balmony 16 gr. Podophylum 140 gr. Senna Indica 140 gr. Calamus 31 gr. Aqua Pura Q. S. 10½ oz. Alcohol Absolutum 22.30 per cent."

It was sold under the claim that it was an effective remedy for scrofula, catarrh, salt rheum, rheumatism, fever and ague, ulcerations, as well as effective in the treatment of diabetes and for curing and preventing the return of syphilis. It was also said to be a cure for leprosy. These claims the government declared were false and fraudulent, made knowingly and in reckless and wanton disregard of their truth or falsity. The government further charged that the claims that the preparation consisted of an appreciable amount of sulphur in solution with liquids, combined by means of a process discovered by Dr. Kaufmann, were false and misleading in that they were not true. Ordway pleaded guilty and was fined $100.—[*Notice of Judgment No. 4370*].

Correspondence

ABSORBABLE METAL CLIPS AS SUBSTITUTES FOR LIGATURES AND DEEP SUTURES IN WOUND CLOSURE

To the Editor:—Referring to Dr. Andrews' article on this subject (THE JOURNAL, July 28, 1917, p. 278), I think it might be interesting to your readers to learn that I went over much of the same ground fully twenty years ago, and also to hear of the disappointing results of my experiments.

Catgut sutures were not then as satisfactory as now. To obviate the danger of infection from them, and at the same time to facilitate vessel ligation, I devised a small "horseshoe-shaped metal clip" and a specially constructed instrument by which to attach and compress it. This instrument, a cut of which then appeared in the catalog of a leading instrument firm in New York City, was so constructed as to catch up the bleeding point with a sliding tenaculum and draw it within its forceps jaws that held the tiny staple, and also compress the artery as it was brought together. The metal which I utilized for this horseshoe clip was not silver, as was that later employed by Dr. Harvey Cushing in his brain work, but aluminum. I demonstrated the principle and method of employment of my clip to the late Dr. Morton of Philadelphia, and asked his opinion of it. He contemptuously replied that he could tie vessels with catgut much faster than I could clamp them, and that it would be silly to fill a wound with irritating and permanent foreign material. (I had laid no claims to the absorptive properties of aluminum.) I was not discouraged, and for several years employed my aluminum clips. Finally I was forced to discard them for the following

reasons: They unfortunately did *not* absorb, becoming encysted in shotlike beads of fibrous tissue, making the part wherein they had been placed feel like the hide of a hunting dog that has been frequently fired at with bird shot; or if placed near the surface or where the part was subjected to constant motion or friction, they finally produced sufficient irritation to be extruded, and in several instances (one an amputation stump and another a hernia repair case) obliged me to cut down on and remove them. There was also danger in protracted operations, or when for any reason much manipulation and sponging was resorted to, of their being detached with opening up of fresh hemorrhage, before the procedure was completed. Finally, the psychic impression produced on many sensitive patients by the knowledge of the presence of the foreign bodies kept them constantly complaining of real or imaginary pain produced thereby.

Let me emphasize that these aluminum clips *did not corrode or absorb away in the tissues* in any of the many cases that remained under my observation.

EVAN O'NEILL KANE, M.D., Kane, Pa.

DISGRACING THE MEDICAL PROFESSION

To the Editor:—According to prevailing reports, it is proposed to draft physicians to bring the number of medical officers up to the requisite 21,000. If this measure is passed by Congress, the laity will consider that the members of the medical profession of the United States have disgraced themselves, by not volunteering, to make such a measure necessary.

Does the average physician who has not volunteered his services to his country consider himself a disgrace? Absolutely not. The psychology of a physician's practice is vastly different from that of any other profession, business, trade or occupation. A customer buys his goods of a certain wholesale or retail house because the firm has always done a square business. A railroad switchman, when he changes location, presents his credentials from the last road he worked for. Not so the physician. His practice is held by his personality, and when he goes to war, his practice goes elsewhere.

The plan suggested, that when a physician goes into the military service, his competitor shall divide the receipts with the absent one, is impracticable and absurd. Does any one imagine that the average doctor feels that the pittance he receives for his night's services is so out of proportion to the services rendered that he must needs hurry to find some one to divide with?

One of the principal reasons why the army is so short of medical officers is that physicians realize that their work of five, ten or fifteen years, in building up a practice, will be lost when they return, and that they, men of middle age, will have to start at the bottom again, in competition with younger men.

Before Congress places this stamp of shame on the medical profession of the United States, by drafting them into the Army, let Congress hold out some promise for the future for these men, who must needs sacrifice all they have accumulated. Let Congress raise the age limit of the regular Medical Corps of the Army to 40 or 45 years, so that the men will be assured an honorable living after the war, and it will never be necessary to draft physicians.

If the war continues until a time when there will be too great a proportion of doctors in the regular army, through the raising of the maximum age limit, then let the practice of medicine and surgery be placed on a federal basis, like that at present contemplated in England.

The very fact that medical men are the only class of men represented by a branch of the military service that it has become necessary to consider drafting should indicate to our legislators that there must be two sides to the problem.

No more patriotic class of men exists in our country today than the medical profession, and to draft them because they do not volunteer under the present unequal terms is a gross injustice to the profession.

If the retirement of a man entering the service at 40 years of age is considered an injustice to the man entering at 30 years of age, then let retirement be adjusted on a sliding scale according to the number of years' service.

E. W. MCBRATNEY, M.D., St. Louis.

THE STAMMERER AND ARMY SERVICE

To the Editor.—Apropos of Sir William Osler's warning concerning the acceptation of neurasthenics into the army, and of Dr. William Dewey's similar warning concerning the high grade feebleminded, it is well to consider also the stammerer in the same connection. In the creation of the new American Army, probably several thousand young men who stammer will present themselves for compulsory examination.

Apparently uncertainty and difference of view exist in the Army itself as to the importance of this disorder to the soldier. One stammerer who has been under my observation was accepted into the local militia of a neighboring state, and later was sent to the Mexican border as a corporal; but, finding that he was very unreliable in his ability to speak the names of his men at roll call, he voluntarily resigned from the service. Another was accepted into the Marine Corps as a commissioned officer, but later was informed by the authorities that he could continue in the service only as a private. He resigned from the Marine Corps, and has since been doing a commissioned officer's training and similar duty for the army. Under treatment he has gained such control over his speech that he would not now at most times be suspected to be a stammerer, and yet at this time he is far from cured. Lately he has been accepted into an infantry officers' training camp. Another, a very marked stammerer, served in the Regular Army of the United States as a private for three years, but not in time of war. Still another was prevented by a wise father from presenting himself for enlistment in the Aviation Corps, because the father believed, probably rightly, that under the stress of this particularly nerve-racking service, his son "would go all to pieces."

Aside from the instances of stammering created by "shell shock" or other forms of war excitement, one reads of the intensification of existing stammering by service in the war, and of the return of stammering that had previously been cured under treatment. Instances of improvement or cure in the war are not yet, and probably will not be, reported.

If one eliminates the occasional stammerer of the genuinely neurasthenic type who falls with increased emphasis in Dr. Osler's category of the militarily unfit, and also eliminates the occasional highly nervous, though not neurasthenic, stammerer, he has left the great body of the stammerers. These are in social relationships highly sensitive and highly emotional; they are usually of good mentality, and excepting for their stammering are not different from other individuals of the same type. Let it be recalled that the stammering phenomenon varies in degree from the lightest hesitation to a most serious spasmodic interference with speech movements. The very light stammerer might be accepted for any military service, at any rate until it became evident that the nervous stress of the military life did not increase his stammering.

With respect to the more profound stammerer, two characteristic facts are to be borne in mind. One is, that stammering is dependent on the particular emotional phenomena happening at any moment to be present in the stammerer's mind, and, therefore, that its manifestations may be wholly absent for hours at a time, but very severe at other times. This irregularity and variableness in the manifestations of the phenomenon may cause entire misapprehension as to its seriousness in the individual case. At the time of the examination for admission to service, the stammering may be largely or even wholly in abeyance, and this is likely to lead to misunderstanding. The second characteristic is that the stammerer of severe type is liable at any moment to become wholly or partly unable to express himself. Since in war the instant giving of a command or the instant making of a report might be attended with great consequence, it is not difficult to understand the unfitness of the serious stammerer for commanding positions on the fighting line. Why might

not the service of the serious stammerer best be rendered in a form of military service in which the lives of others were not immediately jeopardized by his inability to express himself, for example, in the commissary, or hospital, or similar service?

ELMER L. KENYON, M.D., Chicago.

COMMON SENSE AND THE SYNTHETICS

To the Editor:—While the Therapeutic Research Congress is legislating out enemy patents, while the National Research Council is engaged in facilitating the manufacture of synthetic drugs, pharmacologists and clinicians should begin an intensive unprejudiced investigation into the merits of the synthetics. I believe that our gullibility has been capitalized, and that we have been systematically imposed on by commercial scientists. Our sincere appreciation and gratitude toward foreign medical exponents has led us to take their recommendations unchallenged.

If aspirin were common property and cheap, and sodium salicylate patented and expensive, perhaps no one would think of using aspirin. Is not the cheaper drug more efficacious, more prompt and more certain in its action? Let clinicians state their views on this point.

We know the impotence of alkaloids in pneumonia. We know the dictum, when the heart is invaded by a toxin, nothing is of avail. Quinin in all doses has been tried in pneumonia, and I feel that in the end ethyl-hydrocuprein, which is closely related to quinin, will not be found more efficacious even when given under the patent name "Optochin."

With all respect to the great Unna, I suspect that he would not have seen such cures by ichthyol if it were not an exclusively Tyrol fossil. An ointment of sulphur and oil of cade, such as the Compound Sulphur Ointment, N. F., has served me equally well.

Some time ago methylene blue was used with alleged wonderful results in gonorrhea, cancer, indolent ulcers, etc. Now scarlet red is in vogue. The war has brought forward other methods of securing healing. Soon they will all yield the palm to a patented "crimson red." This is not a sarcasm. It is a prediction logically deduced from a mass of known facts and experiences.

The labors of the National Research Council, no matter how successful, will be of little avail. It will produce synthetic drugs. But as soon as the war ends, foreign pharmaceutical houses will deluge us with essentially the same substances. They will be newly named, patented, expensive, and bearing loud testimonials. Our old established drugs, which nobody cares to advertise, will soon lose ground and then become obsolete.

Fortunately for us Americans, we do not need this war to rid us of "divine rights." Let us use it to rid ourselves of sophistry and blind faith. Let common sense come to its own.

JACOB LANSKI, M.D., Chicago.

AN APPEAL FOR AID FOR BELGIAN AND FRENCH PHYSICIANS

To the Editor:—I fear that many of your readers, owing to the activities of the war and the absences of the summer, may not have seen my recent letter appealing for help for our Belgian or French confrères. On the conclusion of peace these physicians will return to devastated homes and looted offices, with nothing but their hearts, their heads and their hands to serve them in diagnosis and treatment. The committee in Paris is endorsed by our colleague, Dr. Joseph A. Blake.

I trust that a generous response to this appeal for help to refit their offices may be forthcoming. I well know the unending appeals for money. But suppose that we were the victims! That will decide in favor of sending aid to them, I am sure.

I will acknowledge all gifts through THE JOURNAL.

W. W. KEEN, M.D., Philadelphia.

"RED CROSS" BASE HOSPITALS

To the Editor:—It has occurred to me that a hospital located near the firing line or where there is danger from air men dropping bombs might have its various units arranged in the shape of a Geneva Cross with the roofs painted bright red. An aviator would have to be very high up in the air not to be able to recognize the group of buildings as a red cross. Base hospitals now paint a large red cross on their roofs, but this plan surely would be much better.

JOSEPH B. DE LEE, Chicago.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 4. Sec., Dr. S. P. Dawes, Juneau.

ARIZONA: Phoenix, Oct. 2-3. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

COLORADO: Denver, Oct. 2. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

HAWAII: Honolulu, Sept. 10-13. Chairman, Dr. Grover A. Batten, 1141 Alakea St., Honolulu.

IDAHO: Pocatello, Oct. 2. Sec., Dr. Charles A. Dettman, Burke.

MASSACHUSETTS: Boston, Sept. 11-13. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MINNESOTA: Minneapolis, Oct. 2-5. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 2. Sec., Dr. William C. Riddell, Power Bldg., Helena.

NEW YORK: Albany, Buffalo, New York City and Syracuse, Oct. 2-5. Chief, Examinations Division, Harlan S. Horner, State Education Bldg., Albany.

PORTO RICO: San Juan, Oct. 2. Sec., Dr. M. Quevedo Baez, San Juan.

RHODE ISLAND: Providence, Oct. 4-5. Sec., Dr. Byron O. Richards, State House, Providence.

UTAH: Salt Lake City, Oct. 1-2. Sec., Dr. G. F. Harding, Templeton Bldg., Salt Lake City.

Candidates' Deficiencies at the Alabama Examination

A letter from the chairman of the Alabama State Board of Health states that at the recent examination conducted by that board the applicants displayed a surprising deficiency in hygiene and medical jurisprudence, indicating that sufficient attention was not being given to these branches in the medical schools. A majority of the candidates were said also to be deficient in physical diagnosis and in diseases of the eye, ear, nose and throat. These statements should be of special interest to teachers in medical schools.

Alabama's Reciprocal Relations

A communication from Dr. S. W. Welch, health officer of Alabama, states that a plan has been adopted by which reciprocal relations are being established with other states. Already such relations have been established with Iowa, Kentucky, Louisiana, Maryland, and Pennsylvania, and similar relations are pending with Arkansas, California, Colorado, Illinois, Indiana, Michigan, New Jersey, New Mexico, North Carolina, Ohio, Tennessee and West Virginia.

Louisiana's Reciprocal Relations

A letter just received from Dr. E. W. Mahler, secretary pro tem. of the Louisiana State Board of Medical Examiners, states that Louisiana now has reciprocal relations with the thirty-three following states: Alabama, Arkansas, California, Colorado, Delaware, District of Columbia, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Pennsylvania, Utah, Vermont, Virginia, West Virginia, Wisconsin and Wyoming.

Endowing Motherhood.—The war is familiarizing the whole civilized world with the notion of endowing motherhood in one form or another, and more is likely to be heard from it.—*Lancet*, London.

Book Notices

DR. LYMAN SPALDING. The Originator of the United States Pharmacopoeia, Co-Laborer with Dr. Nathan Smith in the Founding of the Dartmouth Medical School, and Its First Chemical Lecturer; President and Professor of Anatomy and Surgery of the College of Physicians and Surgeons of the Western District, at Fairfield, N. Y. By His Grandson, Dr. James Alfred Spalding. Cloth. Price, $3.50 postpaid. Pp. 380, with illustrations. Boston: W. M. Leonard, 1916.

This interesting biography is based on the papers that Lyman Spalding left behind him, which fortunately fell into the hands of a grandson who fully appreciated their unusual value. The book consists largely of letters from physicians to Dr. Spalding, only a few copies of his own letters having been found. Interwoven with these letters are accurate accounts and interesting anecdotes of their writers and many of the chief persons mentioned in the letters, so that mention is made of a large number of the leading physicians in this country in the time of Dr. Spalding. The reader follows with growing interest the career of a distinguished but hitherto little known man in medicine. For in addition to the important work indicated in the title of the book, Lyman Spalding was really the first to test publicly the efficacy of vaccination as a preventive of smallpox, which he did in the smallpox hospital at Portsmouth Harbor in 1801, where four recently vaccinated persons and Dr. Spalding lived on intimate terms with two smallpox patients and were inoculated with the actual smallpox virus, all coming off scot-free of the smallpox; in 1800 he began to tabulate all deaths in Portsmouth, and these bills of mortality attracted much attention, Benjamin Rush writing that they were "an ingenious improvement of that species of publication and calculated to add to the certainty of our knowledge upon several medical subjects." Anatomic preparations, especially of the lymphatics, which are said to be unique, made Dr. Spalding's name well known to American anatomists. Beginning in 1812, Dr. Spalding lectured each winter for six years at the Fairfield school, then the only medical school outside of Boston, New York and Philadelphia, and was president of the college part of the time. He died from injury at the early age of 46, but in his short life he accomplished much for American medicine, in the history of which his name will live as the originator of the United States Pharmacopeia. By reason of the importance of his career and of the manner in which it is presented, his biography is a most valuable addition to our medicohistorical literature.

BUILDING HUMAN INTELLIGENCE. By Dr. Arnold Lorand, Physician to the Baths, Carlsbad. Translated from the German by Philipp Fischelis, M.D., Acting Associate Professor of Histology and Embryology, University of Pennsylvania. Cloth. Price, $3 net. Pp. 341. Philadelphia: F. A. Davis Company, 1917.

This volume is based on hygienic and physiologic considerations. The book is made interesting and readable, because of numerous anecdotes taken from personal experience and historical record. The book is not a scientific work, but is rather the expressions of the practical psychology of a physician. The author, realizing that the subject is somewhat beyond the usual character, says: "A severe critic may have ample opportunity to ruffle my feathers. If he will admit, however, in his just criticism that there is at least a single good thought in this work which may further the common welfare, I shall consider the goal for which I have been striving in the preparation of this work as having been attained." As there are many good thoughts in the work, the reviewer must grant that the author has attained his goal.

STANDARD METHODS FOR THE EXAMINATION OF WATER AND SEWAGE. Revised by Committees of the American Public Health Association, American Chemical Society, and Referees of the Association of Official Agricultural Chemists. Third Edition. Cloth. Price, $1.25. Pp. 115. Boston: American Public Health Association, 1917.

This is the culmination of the work of various committees under the supervision of the American Public Health Association in compiling up-to-date analytic methods for public health laboratory workers. The first part of the book is devoted to a detailed description for the chemical examinations of water and sewage. The completeness of the technical operations is a distinct advantage; the observations of various chemists will lend themselves to more critical and reliable comparisons. It is regrettable that the reasons for certain procedures are not more fully developed. The bacteriologic section is treated in much the same manner as the chemical. To all who are interested in the active investigation of water and sanitation, this book is commended as a "standard."

Social Medicine, Medical Economics and Miscellany

PSYCHIATRIC PROBLEMS AT LARGE*

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July 1, 1916, an enumeration of cases of mental disorder, both in and out of institutions, was undertaken in Nassau County, N. Y. A method was applied which was calculated to bring to light more especially cases of sociological significance. These cases were, however, also studied from the medical point of view, so that eventually the material that had been gathered came to be classified in a twofold manner, according to a medical and a sociological classification.

The investigation was conducted essentially in two stages. The first stage consisted in securing leads to cases of probable mental abnormality, and the second in efforts to secure data concerning these cases sufficient to establish the abnormality, if it indeed was there, and to determine at least roughly its nature.

The main sources of leads were as follows: (1) lists furnished by the State Department of Charities, Eugenics Record Office, and Nassau County Association and other charitable organizations in the county; (2) the records of the overseers of the poor; (3) the records of the justices of the peace, police justices, and the district attorney; (4) the records in the county clerk's office of divorce and separation proceedings; (5) lists furnished by neighborhood workers, district nurses, truant officers, clergymen, old residents and other persons; (6) lists furnished by practicing physicians; (7) cases examined in state hospitals, public and private charitable institutions and in penal and correctional institutions, and (8) cases found in the elementary public schools.

The near relatives of all "abnormal" persons living in the county were also investigated, and among them were found many whom we classified as mentally abnormal and to whom no leads were available from any of the sources mentioned. A total of 1,592 "abnormal" persons was thus discovered in the county (exclusive of the cases found in the schools).

The total population being 115,827, the percentage of mentally abnormal persons in the county is found, by calculation, to be 1.37.

Clinically the "abnormal" cases may be divided into four main groups:

Insane	394
Epileptic	72
Feebleminded	634
Constitutionally inferior (inebriates, criminals, prostitutes, chronic dependents, etc.)	492

Not all these cases would require institutional treatment, but, according to the judgment of the medical officers of the survey, only 59.4 per cent. Moreover, for many of the cases institutional treatment is already available; this is true especially of the insane and, to some extent, of the epileptic and the feebleminded.

The survey has shown clearly that for the bulk of cases presenting psychiatric problems, the benefit of psychiatric study, judgment and treatment is not available.

The fact is that the psychiatric basis of many cases of retardation in school, criminal tendency, inebriety, drug habits

* Read before the American Medico-Psychological Association, May 29, 1917; also before the National Conference of Charities and Corrections, June 12, 1917.

and pauperism, is hardly recognized even by medical practitioners. It is, I think, owing to this circumstance that mental clinics, especially in rural or semirural places, have heretofore failed to realize their full possibilities for service.

The usual practice has been merely to organize a clinic and to open its doors to those who would, of their own accord, seek psychiatric advice or who would be sent or brought to the clinic for that purpose by their relatives or physicians. At some of the clinics, attendance has seemingly depended on advertisement, falling off rapidly when advertisement was not kept up.

The great problem evidently is to bring to the clinic cases which are of a psychiatric nature, but not necessarily recognized as such by general practitioners, by laymen, or by the patients themselves.

Perhaps the best plan would be to organize a system of cooperation between the mental clinic and public authorities who have to deal with problems of social maladjustment, such as often arise on a psychiatric basis: (1) school principals having to deal with retardation, truancy and unruliness; (2) justices of the peace, police justices, district attorneys, and county judges having to deal with crime, inebriety, vagrancy, prostitution, etc.; (3) overseers of the poor, county superintendents of the poor, and charitable organizations having to deal with dependency.

In large urban centers it is perhaps not so important—though none the less desirable and advantageous—for an outpatient mental clinic to establish such connections; the functions of the mental clinic are vicariously performed for the police, the courts, the schools and charitable organizations by neurologic clinics, by "clearing houses" for mental defectives, or by psychiatrists especially employed for such purposes. In rural or semirural places no such assistance is, as a rule, available, and, when made available through the establishment of a mental clinic, is not apt to be made use of to any great extent in a spontaneous way, as the communities have not yet been educated to the point of discerning a psychiatric problem, as such, when it exists.

The experience of the Nassau County survey has shown in a most striking way that large opportunities for psychiatric service would develop if the medical staffs of the mental clinics would undertake regular inspections of schools, almshouses, charitable homes, jails, penitentiaries, prisons, etc.

It has been customary heretofore to hold outpatient mental clinics at stated regular times, either fortnightly, or weekly, or perhaps somewhat more often. This does not afford an opportunity for pyschiatric consultations which may be sought in the intervals. In order to provide such an opportunity, each state hospital conducting an outpatient mental clinic should arrange for the psychiatric examinations of persons brought to it for that purpose at any time; and the law should permit the detention of such persons for observation for a period of ten days on an order of a magistrate.

As it is not always convenient or even possible to bring patients either to the outpatient clinic or to the state hospital, some provision would seem necessary whereby a state hospital would be ready at any time to send a member of its medical staff to any part of the hospital district for psychiatric consultation on the request of a proper authority.

It is not to be assumed that even such an organization of outpatient mental clinics as is here advocated would provide fully such psychiatric service as the communities need; it would merely place the state hospital in closer touch with psychiatric problems arising at large in its district, and make unrestricted psychiatric consultation and advice available for the community. In order to make it possible for the state hospitals to render remedial service in full measure, as needed, they must somehow be empowered, in the first place, to furnish, through social service, relief from unfavorable environmental conditions, financial difficulties, unemployment, etc., which often appear as the direct causes of the social maladjustment; and, in the second place, to provide early institutional treatment for the cases in which it seems necessary.

The first of these requirements will perhaps be fulfilled through such cooperation on the part of the poor law officials and charitable organizations as previously described.

The second could be met only by increase of institutional capacity. Today, even in the most highly organized states, the crying need, in the sphere of mental hygiene, is for increase of institutional capacity. The state of New York, for instance—one of the foremost in the Union in this respect—had, in 1910, 396.3 persons in institutions for the insane, epileptic, feebleminded, etc., per hundred thousand of its general population. The material brought to light in the course of the Nassau County survey shows that, by a most conservative judgment, the state could double its institutional provision without the slightest danger of such increased provision proving to be in excess of actual needs.

I wish to refer to a valuable by-product that would develop in the course of the growth of the outpatient clinic if organized according to the plan here advocated; namely, a register of cases of mental disorder, if not complete, at least including all those cases which are of sufficient sociological import to have become the concern of public authorities. The records accumulated by the clinic would gradually develop into such a register.

Judging from the results of the Nassau County survey, it may be anticipated that after several years' development such a register would show that the bulk of all crime, vice, dependency and other social maladjustments in a given community is attributable to a comparatively small fraction of its population. It stands to reason that problems presented by such evils could be much more successfully attacked with the aid of material that would be available in such a register than without it.

Dispensary Control of Tuberculosis

The ninth annual report of the association of tuberculosis clinics of the city of New York says that the work has suffered somewhat during the year covered by the report on account of the diversion of some of the effort of the field nursing service, originally designed for tuberculosis work alone, to include the sanitary supervision of various other infectious diseases. Results inimical to the standards set for tuberculosis work have followed. Enthusiasm for it has been dissipated, it is said, as new problems, more interesting because of their newness, have been taken up. In some instances the use of the tuberculosis machinery has been diverted to meet these needs. It is said, furthermore, that qualitative ideals also have succumbed to quantitative demands, with the inevitable lessening in the efficiency of the tuberculosis follow-up work. There was a decrease in clinic activity during the year covered by the report, but this is construed to indicate that the ten-year campaign against tuberculosis has begun to show definite results, and the actual need for clinic service has grown less. The vital statistics for 1916 show that the tuberculosis death rate has been reduced from 1.61 per cent. to 1.50 per cent., while the drop in the general death rate has been from 13.93 to 13.89 per cent., showing the reduction in the tuberculosis death rate to be 0.7 per cent. greater than the general rate. There were 419 fewer deaths from pulmonary tuberculosis, and the new cases reported during the year were 2,844 less than during the preceding year.

It is said that hospitals for the tuberculous reported that there were a number of vacant beds, and that preventoriums were complaining of difficulty in getting children. On the other side of the picture, however, it is found that while the death rate has declined since 1906, the number of new cases reported has continued to overbalance the number of deaths plus the cases removed from the active register for various reasons, such as "arrested" or "apparently cured," permanently left the city, or "not found" for two years, so that since 1913 there has been an increase of approximately 6,000 registered tuberculosis cases.

It is said that it will take anywhere from ten to twenty years before curves may be plotted that will show results from preventive work for tuberculosis comparable with those so clearly and easily shown in connection with the preventive and supervisory work done for various acute infectious diseases or in infant welfare work.

Medicolegal

Physician Acting in Professional Capacity

(Cincinnati, H. & D. R. Co. vs. Gross (Ind.), 114 N. E. R. 962)

The Supreme Court of Indiana, in affirming a judgment in favor of plaintiff Gross for damages for personal injuries sustained by him while in the employ of the defendant railroad company, says that a surgeon in the employ of the company attended the plaintiff after he was taken to a hospital after the accident. On the first or second evening after the accident the surgeon made an arrangement with two representatives of the company to visit and interview the plaintiff in the waiting room of the hospital. The plaintiff was wheeled into the waiting room and there questioned by the two representatives concerning the wreck. The plaintiff was not previously advised as to the purpose of taking him to the waiting room. The foregoing, among other things, appeared from evidence introduced on behalf of the plaintiff. The surgeon testified that on the occasion of the interview he did not attend the plaintiff as a physician, but went to the hospital for two reasons, one to make sure that the two representatives were allowed to see the plaintiff, and the other to see that he was given proper treatment in his removal to and from the waiting room; that the witness did not participate in the conversation with the two representatives of the company. The surgeon was asked to state what the plaintiff said, but this was objected to and the objection was sustained. It was contended that this ruling was erroneous on the ground that at the time of the interview in question the surgeon was not acting in his professional capacity; but the supreme court holds that the offered evidence was properly excluded. While it was true that in his preliminary examination the witness stated that he was not acting in his professional capacity, it was within the province of the court to determine, from the entire examination of the witness and from other relevant evidence, whether the relation of physician and patient existed at the time, and its decision on the question was, in this case, fairly supported by the evidence. Moreover, the witness, both immediately before and after the interview, at least, represented each of the parties whose interests here conflicted. Under such circumstances it was peculiarly within the province of the trial court, in passing on the admissibility of evidence, to determine what weight should be given to preliminary statements of the witness. The Indiana statute provides that physicians shall not be competent witnesses "as to matter communicated to them, as such, by patients, in the course of their professional business, or advice given in such cases." This enactment has consistently been construed by this court as covering a broader field than is indicated by the literal meaning of the words employed, and, so construed, it renders the physician incompetent to disclose information acquired by him while attending a patient in a professional capacity. This includes all that he sees or observes, while so acting, as to matters communicated by the patient. The rule, which is a beneficent one, is not to be lightly broken down.

Operating on Child at Request of Others Than Parents

(Rishworth vs. Moss et al. (Tex.), 191 S. W. R. 843)

The Court of Civil Appeals of Texas, on the second appearance before it of this case, reverses the second judgment rendered in favor of the defendants, remands the cause, and overrules a motion for a rehearing. The court says that the plaintiff was suing the defendants for damages alleged to have been sustained on account of the death of his daughter, aged 11, which occurred within a few minutes after an operation had been performed on her for the removal of adenoids and tonsils. The plaintiff contended that the operation was performed without the request or the consent, express or implied, of himself and his wife. The child had been taken by two adult sisters for a week or ten days' visit with them in a city about 60 miles from home, in which city they had been in training at a hospital with a view to becoming professional nurses. These sisters took the child to Dr. Moss' office to have the operation performed. This court on the first appeal held that a physician is liable for operating on a person unless he obtains the consent of such person, if competent to give consent, and, if not, of some one who, under the circumstances, would be legally authorized to give the consent; and that, in the case of a child of tender years, consent must be obtained from the parent or guardian. In this case, Dr. Moss relied altogether, as was shown by his own testimony, on permission given him by an agent or agents. At the time the daughters came to him he did not know whether they were even legally in possession of the child; all he knew was that they led him to believe they were legally in possession of her, and that they had authority to have the operation performed. They did not say that they had such authority, but they used language from which such meaning would naturally be deduced. In order, however, to determine whether agency existed, the court must look, not to the acts and declarations of the persons assuming to be an agent, but to the transactions between such person and the persons sought to be charged as principals. The only evidence concerning such matters was furnished by the parents. They testified that the child was permitted to accompany her sisters to the city to pay them a visit for a week or ten days, and with this purpose in view, and no other, she was placed in the custody of her sisters. They were constituted the agents of the parents, but their authority was very limited. It cannot be contended that such an agency would carry with it the implied authority to take the child to a surgeon and have an operation performed on her, there being no emergency. Such an agency would carry the implied authority to employ a physician to attend the child if it should become ill and require medical aid, and if an emergency arose which required that an immediate operation be performed in order to save the life of the child, the agent would undoubtedly have authority to employ a surgeon to perform the operation. Where there has been no change in the child's health after its custody was confided to its sisters for a week, it appears to the court that the sisters would not have any authority to employ physicians to treat the child and endeavor to improve its health, much less to employ a surgeon to perform such an operation as is involved in the removal of the tonsils and adenoids, and requires the use of a general anesthetic. There was nothing in the relation created by giving the custody of the child to its sisters for a short visit which would imply the authority exercised by them. The fact that parents are not present when an operation is to be performed on a little child is a circumstance sufficient to arouse inquiry as to whether they know the operation is to be performed. All of the testimony of expert witnesses with regard to the advisability of performing the operation at the time it was done should have been excluded, there being no evidence of any express or implied or apparent authority. The condition of the child's health, and the advisability of removing tonsils and adenoids could not justify want of authority, no emergency being alleged and proved. Had the child survived the anesthetic and operation, it would have had a cause of action.

Law Making No Provision for Systems Not Taught in Any School—"Neuzopath"—Membership of State Board of Health

(State vs. Heffernan (R. I.), 100 Atl. R. 55)

The Supreme Court of Rhode Island, to which this case was certified for the determination of constitutional questions raised by the defendant, holds that none of the objections properly presented by him to the validity of Chapter 193 of the General Laws, and especially Section 3 thereof, with reference to the practice of medicine in that state, were well founded. The defendant was charged, among other things, with holding himself out to the public as a practitioner of medicine by appending to his name the title of "Neuzopathic Physician," also by appending to his name the title of "Neuzopath," and with practicing medicine and surgery for compensation, without being legally authorized so to do. The court does not find that the provision of Section 3 of Chapter 193, which requires "satisfactory evidence of graduation from a medical school in good standing" before a candidate can be examined or be permitted to practice medicine, is in con-

flict with either the state or the federal constitution. Nor, the court holds, is the law invalid because it makes no provision for persons who desire to practice a system of medicine which is not taught in any school.

The court says that while undoubtedly in stages of its history the practice of medicine has been to some extent empiric, it is safe to say as a matter of common knowledge that a vast amount of accurate information has now been accumulated as to the structure of the human body, as to the functions of its various parts, as to the diseases to which it is subject or exposed, and as to the discovery and use of remedies for the prevention and cure of disease, and that this information is included in the subjects of study in medical schools. It is also a matter of common knowledge that by increased facilities for research and experiment in laboratories by men scientifically trained, within the last few years great advances have been made in a more intelligent and successful practice of medicine and surgery. It is of these and kindred subjects that the person seeking to practice medicine is required by the law to have knowledge. While doubtless there is a difference in the different schools of medicine as to the remedial measures to be employed in the treatment of disease, nevertheless an accurate knowledge of the human body, of the functions of its organs and parts, and of the diseases to which it is subject, must furnish the foundation of medical practice in all schools of medicine. The defendant did not seek an examination in these matters, but said he had originated a system of medicine or therapeutics not taught in any school of medicine; in other words, that he had originated a new method for the discovery, prevention and treatment of disease. It might perhaps be inferred that he was the only practitioner under the system thus originated, and that there was no one qualified to examine him in it. There was no suggestion that the defendant's system of medicine had ever been explained or submitted for examination to any one or had ever been committed to print so that it might be examined or studied by others. A system thus unexplained with apparently no followers is scarcely worthy to be dignified by calling it a school of medicine. In these circumstances, while recognizing that progress in the discovery of the causes of disease and of its prevention is probably now being made, the court thinks it is outside of all reasonable probability that the defendant has discovered such a large field of medical knowledge, hitherto unexplored by any student, investigator or practitioner of medicine, as to permit him to originate a new system of medicine or therapeutics. In the court's judgment it is so utterly improbable, that a legislative provision excluding one from practicing such a system on his fellow men must be held to be in the interest of the general welfare and a reasonable and proper exercise of legislative power.

The court also holds constitutional the requirement of Chapter 115 that a majority of the state board of health must be physicians who are members of some medical society incorporated by the state.

Society Proceedings

COMING MEETINGS

Am. Assn. Obstetricians and Gynecologists, Newark, N. J., Sept. 17-19.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Electro-Therapeutic Association, Atlantic City, Sept. 11-13.
American Roentgen Ray Society, Pittsburgh, Sept. 19-22.
Delaware State Medical Society, Middletown, Oct. 8-9.
Colorado State Medical Society, Colorado Springs, Sept. 25-27.
Indiana State Medical Association, Evansville, Sept. 26-28.
Kentucky State Medical Association, Louisville, Oct. 16-18.
Medical Association of the Southwest, Kansas City, Oct. 15-17.
Michigan State Medical Society, Battle Creek, Sept. 4-6.
Minnesota State Medical Association, St. Paul, Oct. 10-20.
Mississippi Valley Medical Association, Toledo, O., Oct. 9-11.
Missouri Valley Medical Society, Lincoln, Neb., Sept. 20-21.
Nevada State Medical Association, Reno, Oct. 18-19.
New Mexico Medical Society, Las Cruces, Oct. 4-6.
Pennsylvania State Medical Society, Pittsburgh, Sept. 24-27.
Utah State Medical Association, Salt Lake City, Sept. 12-13.
Vermont State Medical Society, Barre, Oct. 11-12.
Virginia State Medical Society, Roanoke, Oct. 23-26.
West Virginia State Medical Association, Fairmont, Oct. 2-4.
Wisconsin State Medical Society, Milwaukee, Oct. 3-5.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children

August, LXXVI, No. 2

1 *Value of Avoidance of Shock and Trauma in Treatment of Eclampsia. E. B. Cragin, New York City.—p. 211.
2 *Uteroscopy Versus Transperitoneal Hysterotomy. A. Heineberg, Philadelphia.—p. 216.
3 Infectious Abortion of Cattle as Complication of Pregnancy of Women; Report of Cases. H. P. De Forest, New York City.—p. 221.
4 Elizabeth Steel Magee Hospital of Pittsburgh, C. E. Ziegler, Pittsburgh.—p. 255.
5 *Roentgen Therapy Successful in Uterine Fibroid Without Affecting Ovaries; Report of Case. G. E. Pfahler and J. A. McGlinn, Philadelphia.—p. 262.
6 Inversion of Uterus. Operation by Spinelli Method. Recovery of Patient. G. E. Shoemaker, Philadelphia.—p. 268.
7 Hysterectomy—Operation of Choice to Terminate Pregnancy, when Subsequent Pregnancy is to Be Avoided. E. Marvel, Atlantic City, N. J.—p. 271.
8 True Value of Certain Pelvic Measurements. J. L. Huntington, Boston.—p. 277.
9 Cervical Repair Following Confinement. T. Coffey, Los Angeles.—p. 282.
10 Pregnancy and Labor Following Operative Procedures on Genital Tract. J. Ronsheim, Brooklyn.—p. 289.
11 Pyelitis During Pregnancy. F. E. Leavitt, St. Paul.—p. 297.
12 *New Method of Treating Pernicious Vomiting of Pregnancy by Blood Transfusion. A. Y. P. Garnett, Washington, D. C.—p. 303.

1. Abstracted in THE JOURNAL, July 14, 1917, p. 144.

2. **Uteroscopy vs. Transperitoneal Hysterotomy.**—The advantages of uteroscopy over transperitoneal hysterotomy are stated by Heineberg as follows: 1. It affords a perfect view of the interior of the uterus without subjecting the patient to the dangers attendant on invasion of the peritoneal cavity. 2. It may be performed quickly under nitrous oxid oxygen anesthesia. 3. The patient experiences no more pain or discomfort than after an ordinary dilatation and curettage. 4. It affords a clear view of the cervical canal as well as of the uterine cavity. 5. The dilated cervical canal insures good postoperative drainage from the cavity of the uterus. 6. It will demonstrate that a very large proportion of cases of obscure intra-uterine disease are nonmalignant and may be efficiently treated by the curet or placental forceps and thus avoid a maximum of cure for a minimum of disease.

5. **Roentgen Therapy in Uterine Fibroid.**—The authors report what they believe to be the first case in which a gynecologist and roentgenologist have definitely planned, and successfully carried out, Roentgen treatment for the reduction or dissipation of a fibroid of the uterus, with the protection of the ovaries, and proof of their success by subsequent pregnancy. They conclude that the results in this case would strongly suggest that, in dealing with a patient otherwise healthy in the childbearing period, in which the uterus is involved by fibroid, the gynecologist is not justified in the removal of the uterus without first making the attempt at treatment with the Roentgen rays by directing the rays against the fibroid and shielding the ovaries. The success of the treatment in a case like this demands, first, a careful and thorough investigation by the gynecologist as to size and position of the fibroid. Second, he should report, so far as possible, on the condition and position of the ovaries, and third, the roentgenologist should be most careful in his technic as to the direction of rays and as to the protection of the skin of the patient, and in shielding the ovarian region, for, if operation is needed later, or if the roentgentherapy is not successful in removing the fibroid, the skin must not become damaged.

12. **Blood Transfusion in Pernicious Vomiting of Pregnancy.**—In two cases reported by Garnett a donor about ten days postpartum was selected as it was thought advantageous to have a donor who had recently passed through pregnancy, but in whom all uterine contractions had then ceased, in the hope that her blood might contain an antibody, antiferment or whatever it may be that would neutralize the toxic agent

in the recipient, this neutralizing substance having been produced in the donor during her pregnancy at which time the toxic substance or substances had apparently been overcome or neutralized by her.

American Journal of Orthopedic Surgery, Boston

August, XV, No. 8

13 *Localization of Growing Point in Epiphyseal Cartilage Plate of Bones. S. L. Haas, San Francisco.—p. 563.
14 *Bone and Joint Infections Treated by Carrel Technic. G. W. Hawley, Bridgeport, Conn.—p. 586.
15 *New Supra-Articular Subperiosteal Approach to Hip Joint. M. N. Smith-Petersen, Boston.—p. 592.
16 Artificial Limbs for Sailors and Soldiers. E. M. Little, London. —p. 596.
17 Case of Paralytic Calcaneo-Cavus with Extreme Deformity Treated by Jones' Method of Tarsectomy in Two Stages. A. P. C. Ashhurst, Philadelphia.—p. 602.

13. **Localization of Growing Point in Epiphyseal Cartilage Plate of Bones.**—The experiments reported by Haas show that an incision through a growing bone at the junction of the metaphysis with the epiphysis always causes a disturbance in growth. A separation in the natural line of cleavage between the epiphysis and metaphysis, after incising the periosteum, causes some loss in length growth. It is possible in exceptional cases, in which a minimal amount of injury is produced, that there will be no hindrance to growth. The excision of the metaphysis causes a very slight disturbance in growth. The excision of the epiphyseal cartilage plate causes practically a complete cessation of active longitudinal growth. The most active and important elements necessary for longitudinal growths are located in the columns of cartilage of the epiphyseal cartilage plate. A limited property of producing length growth is possessed by the cartilage adjacent to the columns of cartilage.

14. **Bone and Joint Infections Treated by Carrel Technic.**—Forty cases of acute and chronic osteomyelitis, compound fractures and joint tuberculosis have been treated by Hawley by this method, and all have responded remarkably well, with the exception of two cases of tuberculosis. In these the early progress was excellent, but the disease process extended and the treatment was abandoned. Hawley says that this is the first time in his experience that it has been possible definitely to sterilize suppurating infections of the bones and joints and see them heal without any evidence of pus and without sinus formation. This has occurred, not in one instance only, but in all the cases not still under treatment. At the same time two very interesting phenomena have been observed which are entirely new—the growth of granulation tissue from the bone itself and a peculiar form sequestration.

15. **New Supra-Articular Subperiosteal Approach to Hip Joint.**—Petersen advises that the usual anterior incision be extended backward from the anterior superior spine along the crest of the ilium, and the flap thus formed reflected downward by subperiosteal dissection, giving an excellent exposure of the superior portion of the capsule and of the acetabulum.

Bulletin Johns Hopkins Hospital, Baltimore

August, XXVIII, No. 318

18 *Hemolytic Substances in Heated Milk and in Milk Cultures of Bacterium Welchii. W. W. Ford and J. H. Lawrence, Baltimore.—p. 245.
19 Venous Congestion in Its Relation to Necroses of Liver. H. Oertel, Montreal.—p. 249.
20 *Degeneration of Leukocytes in Urine as Diagnostic Aid in Tuberculosis of Urinary Tract in Women. H. M. N. Wynne, Baltimore.—p. 251.
21 Ethics of Practice of Medicine from Jewish Point of View. H. Friedenwald.—p. 256.
22 Paleopathology. A. C. Klebs, Washington, D. C.—p. 261.

18. **Hemolytic Substances in Heated Milk and in Milk Cultures of Bacterium Welchii.**—It is shown by Ford and Lawrence that market milk heated to 85 C. for fifteen to twenty minutes and allowed to decompose by incubation at 22 C. or 37 C. for twenty-four to forty-eight hours contains a hemolysin of moderate strength. This hemolysin is independent of the acids in the milk, occurring in neutralized specimens, is thermolabile, being destroyed at temperatures between 55 C. and 60 C., is precipitable by ethyl alcohol and can be digested by pepsin and pancreatin. It is to be classed with the bacterial hemolysin and is in all probability to be attributed to the presence of *Bacterium welchii* in the market milk. Pure milk cultures of *B. welchii* contain a similar hemolysin which is, however, usually slightly more powerful. This also is independent of the acids in the milk, is thermolabile, being destroyed at temperatures between 55 C. and 60 C., is precipitable by ethyl alcohol and can be digested by pepsin and pancreatin. On the basis of the work thus far completed they believe that this hemolysin is a true bacterial hemolysin. It is especially to be differentiated from the hemolysin of both lactic acid and butyric acid, which are thermostabile. The rôle which these acids play in the hemolysis seen in cultures of *B. welchii* is, the authors believe, secondary to that of the true bacterial hemolysin secreted by the organism.

20. **Degeneration of Leukocytes in Urine Diagnostic Aid in Tuberculosis of Urinary Tract.**—In eleven cases of renal tuberculosis cited by Wynne, the tubercle bacillus was demonstrated in ten. The tables contained in the article include eleven cases of renal tuberculosis, for which nephrectomy was performed, fifteen cases of nontuberculous pyuria in which the possibility of tuberculosis was definitely eliminated by operation or necropsy, and twenty cases in which there was no operation but the clinical picture and results of treatment rule out tuberculosis. Wynne concludes that degenerated leukocytes in the urine are not pathognomonic of tuberculosis of the urinary tract, but a marked degeneration is strongly suggestive of this disease. The absence of degeneration of leukocytes does not eliminate tuberculosis. The cytologic study of the urine cannot replace the demonstration of tubercle bacilli or animal inoculation as a means of diagnosis; at best it offers presumptive evidence.

California State Journal of Medicine, San Francisco

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23 Some Heart Problems Suggesting Necessity for Closer Alliance Between Physiologist, Biochemist and Clinician. W. W. Kerr, San Francisco.—p. 283.
24 Syphilitic Arthritis. L. W. Ely, San Francisco.—p. 288.
25 Tonsils as Focus of Infection. J. M. Brown, Los Angeles.—p. 290.
26 Focal Infection Intestinal Involvement. F. F. Gundrum, Sacramento.—p. 293.
27 High Calory Feeding in Typhoid in Children. H. H. Yerington, San Francisco.—p. 294.
28 Clinical Observations of One Hundred Cases of Artificial Pneumothorax. R. C. Matson, Portland, Ore.—p. 297.
29 Tuberculosis in Childhood with Unusual Manifestations. L. Porter, San Francisco.—p. 303.
30 Differential Diagnosis of Abdominal Tuberculosis. G. E. Ebright, San Francisco.—p. 306.
31 Toxic Gastric Hemorrhage. E. L. Crispin, Rochester, Minn. —p. 308.
32 Hypophyseal Symptomatology; Review. C. W. Rand, Los Angeles. —p. 312.
33 Vaccine in Typhoid. H. R. Parker, Dunsmuir, Cal.—p. 316.
34 General Practitioner and Tuberculous Patient. R. A. Peers, Colfax.—p. 318.
35 Medical Inspection of Prisoners at San Quentin; Report of Case of Tinea Versicolor. L. L. Stanley, San Quentin.—p. 323.
36 Case of Hemoglobinuria. N. E. Williamson, San Francisco.—p. 324.

Journal of Bacteriology, Baltimore

July, II, No. 4

37 *Importance of Uniform Culture Media in Bacteriologic Examination of Disinfectants. J. H. Wright, New York.—p. 315.
38 Nomenclature and Classification of Bacteria. R. E. Buchanan, Ames, Iowa.—p. 347.
39 Effect of Hydrogen Ion Concentration on Production of Precipitates in Solution of Peptone and Its Relation to Nutritive Value of Media. I. J. Kligler, New York.—p. 351.
40 *Types of Organisms Isolated from Water After Treatment with Calcium Hypochlorite. M. A. Smeeton, New York.—p. 355.
41 *Morphology of Strain of B. Diphtheriae. P. G. Heinemann, Chicago.—p. 361.
42 Preparation of Hyphomycetes for Microscopical Examination.—p. 365.
43 Blastocystis Hominis: Its Characteristics and Its Prevalence in Intestinal Content and Feces in South Carolina. K. M. Lynch, Charleston.—p. 369.
44 Characteristics of Coli-Like Microorganisms from Soil. B. R. Johnson and M. Levine, Ames, Iowa.—p. 379.
45 Effect of Sterilization on Sugars in Culture Media. C. S. Mudge, Providence, R. I.—p. 403.
46 Presence of B. Coli and B. Welchii Groups in Intestinal Tract of Fish (Stenomus Chrysops). W. W. Browne. Woods Hole, Mass.—p. 417.

47 Nitrogen-Assimilating Organisms in Manure. H. L. Fulmer and E. B. Fred, Madison, Wis.—p. 423.
48 New Differential Plating Methods for B. Bifidus (Tissier) and B. Acidophilus (Moro). J. C. Torrey. New York.—p. 435.
49 Trichomoniasis of Chicks: New and Highly Fatal Disease. J. Weinzirl.—p. 441.
50 *Study of Diphtheroid Group of Organisms with Special Reference to Its Relation to Streptococci. R. E. Bellon, Boston.—p. 447.

37. **Importance of Uniform Culture Media in Bacteriologic Examination of Disinfectants.**—The essential points brought out by Wright may be summed up as follows: Variations in culture mediums are the cause of the majority of the discrepancies obtained in the bacteriologic examination of disinfectants. There is no indication that these variations in culture mediums are in any way due to lack of uniformity in Witte's peptone. Liebig's Extract of Meat, however, should be regarded with suspicion.

40. **Organisms Isolated from Water Treated with Calcium Hypochlorite.**—The organisms found by Smeeton were apparently of the common saprophytic type usually found in air and water. No intestinal forms appeared to survive the treatment in the amount examined. It would appear, therefore, that available chlorin in the proportion of 1 part to 2,000,000 is sufficient to purify surface water obtained under conditions similar to that of the Croton supply.

41. **Morphology of Strain of B. Diphtheriae.**—Heinemann's observations indicate the existence of a close morphologic relationship between the members of the *B. diphtheriae* group. An exhaustive study of this relationship might lead to important scientific results and might be of practical value for the detection of diphtheria carriers, inasmuch as abnormal forms which at present lead to negative diagnoses might, when properly interpreted, show the presence of virulent diphtheria bacilli in unsuspected cases.

50. **Relation of Diphtheroid Organisms to Streptococci.**—It would appear from Mellon's work that the sum total of evidence shows that the diphtheroid group is one of great diversity and lability, and that it is more or less related to several other groups of organisms. Prominent among these is the acid-fast group, represented by *B. tuberculosis;* the streptococcus group, represented by some of its nonhemolytic types; *B. proteus* and the enterococcus.

Kentucky Medical Journal, Bowling Green

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51 Accessory Sinus Disease. G. C. Hall, Louisville.—p. 363.
52 Genuine Physician. H. C. Clark, Falmouth.—p. 366.
53 Vulvovaginitis. A. L. Beckett, Butler.—p. 367.
54 Menorrhagia and Metrorrhagia; Etiology and Pathology. T. A. Pease, Kirbyton.—p. 368.
55 Diabetes Mellitus. W. L. Mosby, Bardwell.—p. 369.
56 Empyema in Childhood: Its Diagnosis and Treatment. P. C. Layne, Ashland.—p. 370.
57 Some Conditions of Liver, Requiring Surgical Intervention. P. H. Stewart, Paducah.—p. 373.
58 Few Practical Points on Diagnosis of Renal Lesions. E. W. Jackson, Paducah.—p. 375.
59 Tuberculosis of Bones and Joints with Treatment, Including Use of Tuberculin. V. Blythe, Paducah.—p. 378.
60 General Practitioner, His Patients and Specialist. W. J. Shacklette, Glendale.—p. 380.
61 One Hundred and Thirty-One Cases of Measles. M. A. Moore, McVeigh.—p. 381.
62 Eclampsia. Z. A. Thompson, Pikeville.—p. 383.
63 Rural Physician and Diagnostic Laboratory. C. K. Beck, Louisville.—p. 384.
64 Fractures. A. C. Henthorn, Garrison.—p. 386.
65 Infectious Meningitis; Study of Twenty-Seven Cases in 586 Necropsies. S. Graves, Louisville.—p. 387.
66 Some Important Facts About Malaria. C. C. Bass, New Orleans. —p. 393.
67 Colles' Fracture. S. Lambert, Owensboro.—p. 396.
68 Enterocolitis; Sporadic Dysentery. R. T. Hocker, Arlington.—p. 398.

Medical Record, New York

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69 Diagnosis and Treatment of Abortion. H. N. Vineberg, New York. —p. 177.
70 Infant Feeding. M. S. Reuben, New York.—p. 181.
71 Significance of Abdominal Pain. M. Behrend, Philadelphia.—p. 188.
72 Bronchial Asthma. M. F. Morris, Jr., Chelsea, Mass.—p. 190.
73 Course, Symptoms and Treatment of Proctitis. A. A. Landsman, New York.—p. 193.

Modern Hospital, St. Louis

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75 What State of Illinois is Doing for Its Blind. C. E. Comstock, Chicago.—p. 80.
76 Conversion of Yachts into Ambulance Boats. W. E. Eaton.—p. 81.
77 Emergency Hospital Construction for U. S. Navy. W. C. Braisted. —p. 87.
78 Hospital Organization under War Department. J. A. Hornsby. —p. 88.
79 Scarcity of Surgical Instruments and Hospital Equipment. V. Mueller, Chicago.—p. 90.
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82 Sanatorium Blanket Problem. H. L. Rockwood, Warrensville, O. —p. 98.
83 Maryland State Hospital Train. D. Z. Dunott, Baltimore.—p. 101.
84 Standardization of Hospitals—University or Teaching Hospital. J. A. Hornsby, Chicago, and others.—p. 103.
85 Columbia War Hospital. F. C. Wood, New York.—p. 112.

New York Medical Journal

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86 Primitive Medicine Man's Virtues. J. Wright, Pleasantville. —p. 197.
87 Bariumized Test Meal with Combined Fluoroscopic and Chemical Study as Means of Rapid Preliminary Stomach Diagnosis. G. W. McCaskey, Fort Wayne, Ind.—p. 202.
88 Study of Drug Action. T. J. Mays, Philadelphia.—p. 204.
89 Campaign for Pure Food. H. W. Wiley, Washington, D. C. —p. 208.
90 Control of Nose and Throat Hemorrhage. L. A. Coffin, New York. —p. 211.
91 Ambulatory Treatment of Peptic Ulcers. H. A. Rafsky, New York. —p. 212.
92 Serum Therapy as Applied to Pneumococcic Infections of Eye. L. Lehrfield, Philadelphia.—p. 214.
93 Femina Adomestica. D. Waterson, El Paso, Tex.—p. 215.
94 Treatment of Excessive Menstruation in Unmarried. S. Axilbund, Philadelphia.—p. 217.
95 Lobar Pneumonia Problem in Army. H. J. Nichols, El Paso, Tex.—p. 219.
96 Use of Inexpensive Drugs in Practice. L. T. de M. Sajous, Philadelphia.—p. 232.

Oklahoma State Medical Association Journal, Muskogee

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98 Prevention of Malaria. J. W. Duke, Guthrie.—p. 321.
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100 Accidental Brain Injuries. A. D. Young, Oklahoma City.—p. 333.
101 Fractures of Base of Skull. C. von Wedel, Jr., Oklahoma City. —p. 335.
102 Application of Principle of Bone-Graft to Unretainable Recent Fractures. M. E. Stout, Oklahoma City.—p. 337.

Ophthalmic Record, Chicago

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103 Present Status of Corneal Transplantation and Some Experimental Data. S. Walker, Jr., Chicago.—p. 383.
104 Stereoscopic Campimeter Slate. R. I. Lloyd, Brooklyn.—p. 391.
105 Vernal Conjunctivitis. F. Allport, Chicago.—p. 395.

Southwestern Medicine, El Paso, Texas

July, I, No. 7

106 Intestinal Obstruction; Report of Cases. R. L. Ramey, El Paso. —p. 9.
107 Discussion of Diagnosis and Treatment of Infantile La Grippe. W. W. Dill, Albuquerque, N. M.—p. 12.
108 *Nonpassive Expiration Theory of Bronchial Asthma. O. H. Brown, Phoenix, Ariz.—p. 14.
109 Immunity in Tuberculosis. D. C. Twichell, Albuquerque, N. M. —p. 17.
110 Clague Electrolytic Treatment of Lead Poisoning. L. G. Witherspoon, El Paso, Tex.—p. 20.
111 Idiopathic Epilepsy. E. B. Shaw, Las Vegas, N. M.—p. 23.
112 Herpes Zoster Ophthalmicus; Report of Case. A. D. Wilson, Prescott, Ariz.—p. 31.

108. **Nonpassive Expiration Theory of Bronchial Asthma.**—Brown likens a bronchiole with its respiratory bronchioles, atria, infundibula and alveoli, constituting the lobule, to a sort of complicated Maxim silencer or muffler construction, for air to wander about in on its way from the remote air cells to the bronchi, trachea and outside atmosphere. Inspiration takes place with muscular effort under all conditions; expiration is a passive process in normal breathing. When expiration is made an active process by bringing the strong abdominal muscles into use to expel the air from the lungs,

the momentum of the air will be greatly decreased and the air tension within the alveoli will be much heightened. This increased pressure is applied to all structures within the chest and will affect all thin structures. This, then, is Brown's theory: The high tension tends to cause the thin walled bronchioles to collapse, and thus further hinders the exhalation. It strikes the pulmonary capillaries, dams the blood from them to the right heart, larger veins, and thence to the tributaries which have an external pressure of but one atmosphere. The redness of the face and the swelling of the neck veins during coughing paroxysms is evidence of this. The bronchial venules and capillaries being under approximately one atmosphere pressure even during the time of forceful expirations get their share of the dammed back blood. Since the pulmonary capillaries anastomose direct with the bronchial capillaries, blood is forced to the bronchial mucosa. The high alveolar pressure is applied also to the exterior of the bronchial vein and hence facilitates the damming of the blood of the bronchial vein and thence to the bronchial venules and capillaries. The pressure is also applied to the bronchial lymph duct, and the lymph is forced into the lymph spaces of the bronchial mucosa. The pressure applied to the pulmonary capillaries as well as damming the blood to the right heart forces it onward to the left heart and aorta and causes a rise of arterial blood pressure during expiration, and the higher the arterial pressure becomes the more blood will be pumped through the bronchial vein to the mucosa. Forceful expirations without assistance from inflammatory or anaphylactic swelling within the bronchi might produce sufficient passive congestion of the bronchial mucosa greatly to narrow the lumen of the bronchi. The common cause of forceful expirations is inflammation and irritation of some part of the respiratory tract. Any inflammatory or anaphylactic swelling or other narrowing of the bronchial mucosa, coupled with coughing, sneezing, dyspnea, or hard breathing of any sort or source may result in such markedly narrowed lumen of the bronchi as to produce expiratory dyspnea, loud piping râles and wheezes, an accumulation of mucus with pellets, shreds and bronchial casts, and emphysema. This, Brown says, is asthma.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

June, XI, No. 1

1 *Malaria in the Gold Coast Colony, West Africa. J. W. S. Macfie and A. Ingram.—p. 1.
2 Protozoologic Investigation of Cases of Dysentery Conducted at Liverpool School of Tropical Medicine. H. F. Carter, D. L. Mackinnon, J. R. Matthews and A. M. Smith.—p. 27.
3 Occurrence of Ankylostoma Ceylanicum in West African Degs. W. Yorke and B. Blacklock.—p. 69.
4 Occurrence of Spirocheta Eurygyrata in Europeans in England, with Note on Second Species of Spirocheta from Human Intestine. J. W. S. Macfie and H. F. Carter.—p. 75.
5 Relapsing Fever Spirochetes. J. W. S. Macfie and W. Yorke.—p. 81.
6 *Persons Who Have Never Been Out of Great Britain as Carriers of Entameba Histolytica. W. Yorke, H. F. Carter, D. L. Mackinnon, J. R. Matthews and A. M. Smith.—p. 87.
7 *Studies in Treatment of Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and C. Forster Cooper.—p. 91.
8 *Id. Intramuscular Injections of Quinin Bihydrochlorid in Simple Tertian Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and C. Forster Cooper.—p. 113.

1. **Malaria in Gold Coast Colony, West Africa.**—Many of the most serious diseases of other tropical countries are either unknown or are but rarely encountered in West Africa. Cholera, for example, has never yet broken out on the Gold Coast, and plague, although it has visited the colony, is not an established disease; kala-azar and other Leishmania infections, undulant fever, and tick fever are very rarely seen; typhoid fever is uncommon, and the trypanosomiasis that does occur is of the relatively mild type due to infections with *T. gambiense*. Dysentery is prevalent, but it is mainly amebic, and yellow fever and cerebrospinal meningitis periodically occur in fatal outbreaks. Malaria, however, is exceedingly common, and is mostly of the subtertian variety. In the majority of the blood films neither schizonts nor gametocytes are present to aid in the diagnosis. The identification of the parasites has therefore to be made in the great majority of cases from the characters of the trophozoites. The points which Macfie and Ingram have found of greatest assistance in recognizing the subtertian parasites have been the small size of the organisms, the absence of enlargement of the enveloping erythrocytes, the characteristic coarse stippling which can usually be brought out by suitable staining, and especially the precocious division of the chromatin.

6. **Persons Never Out of Great Britain Carriers of Entameba Histolytica.**—An examination of 344 persons who had never been out of Great Britain showed that at least ten (2.9 per cent.) harbored in their feces cysts morphologically indistinguishable from those of *E. histolytica*. By feeding experiments on kittens the cysts in one of these cases were proved to be pathogenic.

7. **Studies in Treatment of Malaria.**—Twenty-two cases of malaria were treated by intravenous injection of tartar emetic. The solution used for injection was 2 per cent. tartar emetic in water containing 0.5 per cent. phenol. All these patients had parasites (trophozoites and gametes) in their blood on the day treatment commenced. The individual injections varied from 5 to 15 cg., and the total amounts from 15 to 67.5 cg. The initial dose was 5 cg. in seven cases, 7.5 cg. in one, and 10 cg. in two; in subsequent injections the dose was increased to 10 cg. or 15 cg. Thus in eight of the ten cases a larger amount was given than that (32 cg.) employed by Rogers, and both the initial and the maximum doses were also larger. Not only did the course of the treatment fail to clear the parasites (trophozoites or gametes) from the cutaneous blood, but in six patients the rigors continued and the condition became so serious that the authors were compelled to resort to the administration of quinin. In striking contrast to the failure of antimony either to control the fever or eradicate the parasites from the peripheral blood in these six cases, was the action of quinin, after the administration of which, in every instance, the febrile paroxysms ceased abruptly, and parasites, both trophozoites and gametes, disappeared from the cutaneous blood. In none of eight cases of malignant tertian malaria in which gametes were present on the day treatment began did the injections cause them to disappear from the peripheral blood. In one of two cases in which they were not present on the first day of treatment they made their appearance two days later, while in the other they appeared on the fifth day after treatment ceased.

8. **Intramuscular Injections of Quinin Bihydrochlorid in Simple Tertian Malaria.**—The authors found that in cases of simple tertian malaria an intramuscular injection of quinin bihydrochlorid, 15 grains in 2 c.c. of water, on each of two consecutive days causes the cessation of febrile paroxysms of simple tertian malaria and effects the disappearance of all stages of the parasite from the cutaneous blood. The action, however, is only temporary, a relapse occurring within two or three weeks.

Archives of Radiology and Electrotherapy, London

July, XXII, No. 2

9 Case of Traumatic Dislocation of Right Half of Pelvis. C. H. S. Webb.—p. 33.
10 *Skin Ink. N. S. Finzi.—p. 38.
11 Simple Method of Localization of Foreign Bodies. J. S. Young.—p. 40.
12 Roentgen Observations on Duodenum, with Special Reference to Lesions Beyond First Portion. J. T. Case.—p. 41. (Continued)

10. **Skin Ink.**—The following formula is given by Finzi: acid pyrogallic, 1 gm.; acetone, 10 c.c.; liquor ferri perchlor. fortior, 2 c.c.; spiritus vini meth. ad. 20 c.c. The solution is best kept in a bottle with a camel's hair brush attached to the cork. The mark is a brownish-gray at first, but after a few hours turns a brilliant black. It is unaffected by iodin, acetone, ether soap, etc. It can be scrubbed with a nail brush and ether soap two days after it is made without being completely removed.

British Journal of Tuberculosis, London

July, XI, No. 3

13 Shakespeare's References to Consumption, Climate and Fresh Air. St. C. Thomson.—p. 95.

14 Tuberculous Soldier. G. S. Woodhead and P. C. Varrier-Jones.—p. 99.
15 *Delayed or "Latent" Tuberculous Infection. S. Delepine.—p. 107.
16 *Value of Arneth's Leukocyte Count in Pulmonary Tuberculosis. F. E. Taylor and H. Wilson.—p. 112.
17 Sanatorium Market Garden Colony. N. D. Bardswell.—p. 119.
18 Observations of Tuberculous Patient. H. H. Barnes.—p. 124.

15. **Delayed or "Latent" Tuberculous Infection.**—In the experiments referred to by Delepine, the period of latency did not exceed three or four weeks, but it was sufficiently long to reveal an aspect of infection processes which must be of great importance, more especially in relation to latent infections. The fact that tubercle bacilli were still living and capable of a modified pathogenic action after being kept for nearly 500 days in a natural tuberculous product (milk), supports the view that under certain circumstances tubercle bacilli are still infective after remaining dormant for a considerable period of time.

16. **Value of Arneth's Leukocyte Count in Pulmonary Tuberculosis.**—The following practical conclusions may be drawn from Taylor and Wilson's observations: Where there is much levodeviation no great permanent benefit may be anticipated from treatment beyond a prolongation of life. Should levodeviation be absent, even with an extensive lesion, the probability is that the disease will progress to chronicity. There are cases where an active process with levodeviation may develop into a smoldering fibrosis with improvement in the leukocyte count, and this process seems to be favored by the administration of tuberculin. An investigation of the nuclear condition of the leukocytes by Arneth's method can render valuable aid in prognosis.

British Medical Journal, London

July 21, II, No. 2951

19 Clinical Organization of Medical Profession. C. O. Hawthorne.—p. 69.
20 *Antiseptic Properties of Acriflavine, Proflavine, and Brilliant Green. C. H. Browning, R. Gulbransen and L. H. D. Thornton.—p. 70.
21 Medical and Surgical Notes from Mesopotamia. G. G. Turner.—p. 75.
22 Case of Acholuric Jaundice. W. H. McKinstry.—p. 79.

20. **Antiseptic Properties of Acriflavine, Proflavine and Brilliant Green.**—These compounds were investigated by the authors and they found that flavine compounds and brilliant green are antiseptics which exert a slowly progressive bactericidal action. Concentrations of these substances which at first inhibit and finally kill bacteria, are without harmful effect on phagocytosis or on the tissues locally or generally; hence, they are specially suited for therapeutic purposes in infected wounds. Flavine compounds may be applied to the peritoneum with safety. Flavine compounds (acriflavine and proflavine) are enhanced in their bactericidal potency by the presence of serum; brilliant green, in common with most other antiseptics, is reduced in its activity by serum. When the antiseptic is inactivated by serum, frequent renewal of the water solution is indicated; this, of course, is only permissible provided that the substance is not in itself toxic. Brilliant green satisfies the requirements for application by repeated irrigation, as a powerfully bactericidal solution (1:2,000) in water is practically innocuous to the tissues. On the other hand, since flavine compounds are most bactericidal in serum, the indication is to arrange the wound dressing so that these antiseptics may act in a serum medium; also, since these bodies are not rapidly thrown out of action by serum accumulative deposit should be prevented by avoiding too frequent additions of considerable quantities of the antiseptic solution. Clinical experiences have substantiated these conclusions, and the evidence at disposal points to the application of flavine bodies by means of gauze packing or some appropriate modification of this procedure as likely to yield the best results. Thus there is evidence that, by taking full advantage of the properties of flavine bodies, a relatively simple technic may be followed. The application of the flavine compounds especially for the purpose of preventing the onset of septic manifestations in early wounds is emphasized; also their use for preventing exacerbations after operating in areas already infected.

Dublin Journal of Medical Science

March, CXLIII, No. 543

23 Fractures and Fracture Dislocations. J. S. M'Ardle.—p. 153 (Continued).
24 Theory of Body Temperature. J. M. O'Connor.—p. 160.
25 Continuous Surgical Laparotomy Sponges. W. J. Smyly.—p. 165.
27 Case of Abscess of Tongue. D. Hennessy.—p. 192.
28 Recollections of Centro-Continental Holiday. J. Knott.—p. 193.

April, CXLIII, No. 544

29 Nephritis. W. Boxwell.—p. 225.
30 Bone Grafting for Pott's Caries. W. I. de Wheeler—p. 232.
31 *Case of Enteric Fever with Hyperpyrexia. H. C. Drury.—p. 237.
32 Place of Curare in Treatment of Tetanus. J. S. M'Ardle.—p. 239.
33 Acute Alcoholic Pancreatitis. W. St. C. Symmers.—p. 244.
34 Shell Shock. C. P. Smyly.—p. 247.
35 Operative Treatment of Fixed Backward Displacement of Uterus. A. Smith.—p. 257.

May, CXLIII, No. 545

36 High Explosives. T. N. T.: Its Toxic Action in Munition Workers. Detection of T. N. T. in Urine, with Experiments. W. G. Smith.—p. 289.
37 Tetanus. J. S. M'Ardle.—p. 298. (To be continued.)
38 Limitations of Vaccine Treatment. R. J. Rowlette.—p. 306.
39 Burns and Scalds as Cause of Child Disablement and Death. J. Moore.—p. 313.

June, CXLIII, No. 546

40 Case of Intrathoracic Lymphosarcoma. G. E. Nesbitt.—p. 353.
41 Tetanus. J. S. McArdle.—p. 355. (Concluded.)
42 Influence of Environment on Morphology of Acne Bacillus. W. M. Crofton.—p. 364.
43 Typhoid Fever, with Special Reference to Its Early Diagnosis. W. F. Wicht.—p. 366.
44 Nephritis After Burns. J. Moore.—p. 375.

July, CXLIV, No. 547

45 Fevers Among Troops in Egypt. T. G. Moorhead.—p. 1.
46 Fractures and Fracture Dislocations. J. S. McArdle.—p. 21. (Concluded.)
47 *Tuberculosis on Virgin Soil. H. T. Marrable.—p. 25.

31. **Case of Enteric Fever with Hyperpyrexia.**—This case is of special interest in several points: (1) The acute onset with continuous high temperature—103 to 104 F. from the evening of admission, which was apparently the sixth day of disease, till it terminated; with a fatal exacerbation on the tenth day to 107.6 F.; (2) The diagnosis of enteric positively supported by the atropin test without delay and with great ease; (3) the appearance of "delirium ferox," which appears to be a very fatal symptom in this disease; (4) the confirmation of the diagnosis by postmortem examination, where the intestinal lesions were seen in an unusually early stage.

47. **Tuberculosis on Virgin Soil.**—Up to 1900, pulmonary tuberculosis was unknown in Central Persia, a plateau varying from 4,000 to 6,000 feet. About the year 1900 it appeared among the Armenians of Julfa, a village two miles from Ispahan, being introduced into that community by an Armenian merchant who had lived in India. Two years later it appeared among the Mohammedans in the town of Ispahan. Between the years 1900 and 1908 over 100 cases were seen and treated in Ispahan. Two facts stand out with regard to these cases: first, the rapidity of the disease; rarely did it last more than six months; never more than one year; secondly, the mortality: all died. In 1908 treatment with tuberculin was commenced. Up to the end of 1914 close on 500 patients had been treated by this method. The average time occupied by the treatment was six months. The preparations used were tuberculin bouillon filtrate bovine (P. T. O.), old tuberculin bovine (P. T.) and old tuberculin human (T.). The first dose administered was rarely larger than 0.0001 c.c., P. T. O., and this was increased until the patient was able to tolerate 1 c.c. T. The treatment was then stopped; test injections of 0.5 c.c. and 1 c.c. T. being given once every three months for the first year, and once every six months for the next two years. If at the end of three years no reaction had taken place, the case was considered cured; if reactions occurred, a second and sometimes a third shortened course of treatment was given. Forty per cent. were alive and well three years after the last reaction to a large dose of tuberculin. In 20 per cent. of the cases the treatment was found unsuitable, and discontinued; the remainder of cases were lost sight of. Previous methods of treatment had proved a complete failure, and in consequence tuberculin was tried in cases which could not be considered favorable, such as mixed infection; hence, the results are encouraging.

Glasgow Medical Journal

July, LXXXVIII, No. 1

48 Two Cases of Subdural Hemorrhage Due to Injury Without Fracture of Skull. J. H. Teacher.—p. 1.
49 Acute Cystitis. A. G. Faulds.—p. 7. (Concluded.)

Indian Medical Gazette, Calcutta

June, LII, No. 6

50 Tour of Instruction. G. G. Giffard.—p. 185. (Continued.)
51 Quarantine Station of Tor. N. Davis.—p. 197.
52 New War Splint for Fractured Femur. J. A. Shorten.—p. 201.
53 Accidental Suffocation: Important from a Medicolegal Point of View. M. N. Ghelani.—p. 204.

Sei-I-Kwai Medical Journal, Tokyo

July, XXXVI, No. 7

54 Third Report on Action of Urea on Tetanus Toxin. H. Sewaki and Y. Tagami.—p. 53.
55 Case of Cerebrospinal Meningitis Caused by Fränkel's Pneumococcus. T. Nomura.—p. 65.

Journal of Tropical Medicine and Hygiene, London

July 16, XX, No. 14

56 Tropical Diseases Met with in Balcanic and Adriatic Zones. A. Castellani.—p. 157. (To be continued.)

Lancet, London

July 21, II, No. 4899

57 *Treatment of Amebic Dysentery with Emetin Bismuth Iodid. W. Waddell, C. Banks, H. Watson and W. O. Redman King. —p. 73.
58 *Effect of Trinitrotoluene on Blood. P. N. Panton.—p. 77.
59 War Surgery in Serbia: Penetrating Wounds of Abdomen. F. Armstrong.—p. 82.
60 Trench Fever. E. R. Grieveson.—p. 84.
61 *Premeningitic Rash of Cerebrospinal Fever. C. P. Symonds. —p. 86.
62 Purpuric and Cerebral Symptoms Occurring in Defervescence of English Measles: Two Fatal Cases. T. Goodard Nicholson.—p. 87.
63 Case of Recovery After Thrombosis of Superior Vena Cava. M. I. Hounsfield.—p. 87.

57. **Treatment of 102 Carriers of Amebic Dysentery with Emetin Bismuth Iodid.**—Waddell and his associates found that emetin bismuth iodid is much more effective than emetin hydrochlorid in the treatment of carriers of *Endameba histolytica*, but about 20 to 25 per cent. of failures may occur. The intensely irritating properties of the drug in many cases are a drawback in its general application. It is advisable to keep cases under observation for not less than fourteen days after treatment, and to examine them not less than four times during that period if relapses are to be detected. The drug is without appreciable effect on the intestinal flagellates, but has an effect, usually temporary, on *Endameba coli*.

58. **Effect of Trinitrotoluene on Blood.**—Panton's experimental work is not yet concluded, but his results are for the most part negative. Large doses, up to a gram, of T. N. T. dissolved in toluol can be given to rabbits without any serious effect. Injections of dinitrobenzol were similarly harmless. Nitrous oxid gas given to rabbits and white rats gave rise to cyanosis, drowsiness, and a yellow staining of the fur, but to no other ill effects. If the percentage of nitrous oxid gas in the fume chamber was allowed to rise too high respiratory distress resulted, and in one or two instances dyspnea remained for several days, but in no case was sufficient of the gas given to produce a fatal pulmonary complication. The animals, even with small quantities of the gas, showed cyanosis and gave a positive Haldane test in the blood. Neither jaundice nor anemia was induced in any instance.

61. **Premeningitic Rash of Cerebrospinal Fever.**—In three cases of cerebrospinal fever Symonds observed this erythematous rash; it was in each instance observed very early after the onset, and before there were any symptoms of meningitis to suggest the diagnosis. In one case where the patient was under observation from the onset, there was a profuse rash to be seen six hours later, which had disappeared four hours after it had first been observed. In the second case the erythematous rash was present twelve hours after the onset and had almost disappeared six hours later. In the third case the probability is that there was primarily a local meningococcal infection of the throat and nasopharynx, and that this became a general infection after the patient's admission to hospital. Probably, therefore, in all three cases the rash had made its appearance and faded away within twenty-four hours of the onset of the general infection, and it was a striking feature of each case before meningeal symptoms suggested the diagnosis.

Annales de Médecine, Paris

May-June, IV, No. 3, pp. 229-376

64 *Localization of Nerve Centers by Effects of Skull Wounds. (Topographie crânio-cérébrale.) P. Marie, C. Foix and I. Bertrand.—p. 229.
65 Graphic and Radioscopic Study of Congenital Disease of the Heart; Five Cases. (Les syndromes infundibulaires.) E. Lenoble.—p. 250. (See title 74 below.)
66 *Vegetating and Suppurating Dermatitis. H. Gougerot and Clara. p. 279.
67 Histologic Injury of the Spinal Cord from Concussions. (Commotion de la moelle épinière.) J. Lhermitte.—p. 295.
68 Typhoid and Paratyphoid in the Vaccinated and Nonvaccinated. P. Pagniez and P. V. Radot.—p. 308.
69 *Graphic Record of Reflexes. (La myographie clinique.) A. Strohl.—p. 315.
70 *The Intra-Ocular Arterial Pressure. P. Baillart.—p. 329.
71 Fasting in Treatment of Diabetes Mellitus. N. B. Potter (New York).—p. 341.

64. **Localization of Brain Centers in Men with Skull Wounds.**—Marie, Foix and Bertrand here amplify their previous communications on the uniformity of the symptoms that accompany injury of certain parts of the skull. In their total 400 cases of skull wounds they found only two skulls so steeple-shaped that their outline chart did not apply. They give illustrations showing the regions of the skull where any moderate wound of the skull caused a certain set of symptoms, uniform in all. The findings confirmed with precision the already known data, and have added much that was new to the list. A severe and deep lesion is necessary to induce hemiplegia. Monoplegia may develop as paralysis of both legs or of one arm, or as a paretic state of the face, the motor centers for these ranging downward from the top of the ascending frontal convolution. The center for the legs is on the median line of the skull, at right angles to it, touching a vertical line from the posterior margin of the mastoid. The lesion thus straddling the median line explains why the crural monoplegia affects both legs as a rule. With monoplegia of leg or arm, the tendon reflexes were inclined to be exaggerated, the automatic weakened, which seemed to be a favorable omen. The lower portion of the ascending frontal convolution did not seem to preside over any motor phenomena; and nothing short of deep destructive lesions in the anterior frontal region entailed serious disturbance. In two cases of this type there was an abscess in this region and the mind worked torpidly, the memory was impaired, and the speech very slow and scanning, with stammering or rather repetition of syllables in one case.

66. **Parasitic Vegetating Dermatosis.**—Gougerot and Clara describe what seems to them a new form of a vegetating, suppurating skin affection. It involved nearly the whole body of the previously healthy man of 45. He worked in a foundry in France, and in a few months the affection had spread practically over the entire body, the maximum on the head and legs. The affection developed in four waves, and it was conquered by local treatment with petrolatum containing 5 per cent. camphorated naphthol. On account of the resemblance to American mycosis the man was given potassium iodid, and arsenic on account of the resemblance to Brazilian leishmaniosis. No germ unmistakably of causal import could be isolated, but the parasitic nature of the trouble was manifest. It seems, they say, to be a new type in the great group of parasitic verrucous and vegetating dermatoses.

69. **Graphic Registration of Tendon Reflexes.**—Strohl has been applying in the clinic the delicate electric instrument devised to record the reflex movement in the knee-jerk, ankle clonus, etc., in experimental physiology. He gives an illustrated description of it and reproduces tracings to show the ease, simplicity and reliability of the procedure while in examining large numbers of men or the same patient at different times, this clinical myography introduces unprecedented precision into the data obtained.

70. **Intra-Ocular Arterial Pressure.**—Bailliart has been examining the retinal artery in fifty persons between 25 and 47, increasing the natural pulsation by light pressure on the eyeball through the eyelid. He comments on the remarkable

fact that the resulting transient total loss of vision has not been regarded as of particular moment in the research done in this line with the oculocardiac reflex, etc. A black curtain, starting from the nose, spreads out over the visual field for ten or fifteen seconds. The interval before the blindness becomes total varies in different persons; possibly the rapidity of the blood flow may influence it. The practical side of the research reported is the suggestion that possibly the pressure in the retinal arteries may prove illuminating as to the pressure in the cerebral arteries so close at hand, rather than by estimating the pressure from the distant radial artery. In any event, he says, it is a new application of sphygmomanometry.

Bulletin de l'Académie de Médecine, Paris

July 10, LXXVIII, No. 28, pp. 13-24

72 *Treatment of Suppuration in the Pleura. T. Tuffier.—p. 16.
73 Dry Hypochlorite and Boric Acid Treatment of Chronic Otitis Media. A. Pugnat (Geneva).—p. 19.
74 Frequency of Changes in the Infundibulum of the Pulmonary Artery with Congenital Heart Disease. E. Lenoble.—p. 19.
75 Advantage of Farm Labor Camps for Soldiers Temporarily Disabled by Malaria. E. Jeanselme.—p. 21.

72. **Treatment of Intrapleural Suppuration.**—Tuffier has now a record of twenty-two old chronic cases and twenty-two quite recent cases of intrapleural suppuration, all confirming the benefit from clearing out the focus and closing it as soon as possible, watching over the microbes in the lesion, and sterilizing with neutral solution of chlorinated soda or its equivalent, closing the opening as soon as the pleural cavity is clinically sterile, thus transforming a pyothorax into a pneumothorax which heals spontaneously. In his later series of recent cases, there were ten of medical purulent pleurisy and two of suppurating hemothorax. One was a girl of 14 with purulent pleurisy after six weeks of ordinary pleurisy. Five days after pus was found, he resected a rib and evacuated over a liter of pus from the pleura. No adhesions were evident. The pleura was sterilized by the Carrel method, and the pneumococcus curve and the temperature curve kept parallel. The operative wound was sutured the tenth day, and by the twenty-fifth day recovery was complete, the lung functioning normally, as is evident on radioscopy. In another, a streptococcus case, over a liter of pus was evacuated and, soon after, a second liter after resection of the seventh rib. Under Carrel treatment the opening was closed in a month and the lung soon recuperated entirely. Fourteen cases of suppurating wounds of the pleura have run the same uneventful course to recovery under these measures in another ambulance. It is evident that the penetration of the air into the pleura is the great obstacle to the expansion of the lung, and hence to complete recuperation. But the air cannot be kept out safely until the cavity has been rendered sterile. In short, he concludes, with these simple means we have it in our power to prevent purulent pleurisy from becoming chronic. By healing it before serious damage has been done, the lung behaves like a normal lung thereafter.

Lyon Chirurgical

May-June, XIV, No. 3, pp. 413-624

76 Extraction of Foreign Bodies in the Mediastinum; Ten Cases; Recovery. Patel and Papillon.—p. 413.
77 *Anatomic Localization of Projectiles by Orthoradioscopy. J. Coste.—p. 441.
78 *Probe with Resonator Attachment. J. Stefani.—p. 476.
79 Spinal Anesthesia in Two Hundred Cases. G. Leclerc.—p. 479.
80 Postoperative Treatment of Wounds. J. Cocci.—p. 489.
81 *Muscular Osteomas. A. Policard and B. Desplas.—p. 497.
82 *Restoration of Severed Nerves. E. Duroux and E. Couvreur.—p. 515.
83 *Gas Gangrene. E. Vincent.—p. 539; G. Leclerc.—p. 578.
84 Tetanus Restricted to Region of Wound. S. Colombino.—p. 586.
85 Amputation of the Thigh; Forty-Six Cases. A. Chalier.—p. 591.
86 *Prostheses Among the Ancients. H. Branchu.—p. 608.
87 War Wound of the Ankle, with Recovery of Function. J. Kocher.—p. 623.

77. **Orthoradioscopy for Locating Projectiles.**—Coste expatiates on the instructive findings in locating a foreign body by the principle of displacing the tube at regular intervals and taking parallel views from front to rear and from side to side. The vertical rays alone are utilized in orthoradioscopy, the diverging rays being shut off by a very narrow diaphragm. He gives eighteen diagrams or views thus obtained. No special instruments are required.

78. **The Stylophone Vibrator.**—This is the name given by Stefani to his combination of a metal probe and vibrating resonator. The touch of the probe against the particle of metal can be both felt and heard by this means.

81. **Osteomas in Muscles after War Wounds.**—In the two cases of which an illustrated description is given, the circumscribed ossification proceeded rapidly in the connective tissue, the muscles being invaded only secondarily. The osteomas displayed some tendency to retrogress later.

82. **Section and Suture of Nerves.**—The eight experimental sections of the sciatic and external popliteal nerves on dogs that are described were followed by repair, and the motor functioning was very little impaired. Similar injury in man induces pronounced paralysis. The experimental and clinical experiences related emphasize the importance of early suture after a nerve is severed. In the five clinical cases the ends were coaptated as an electrician splices a cable. This restores the nerve to a certain extent and trophic disturbances are materially improved by it, but this is probably merely the result of the freeing of the ends of the stumps from cicatricial and edematous tissue. The axis cylinder does not regenerate for a long time, progressing only about 1 mm. a day. In one of the cases the distance from the injury to the tip of the fingers was about 620 mm., and it took 630 days for complete return of functioning.

83. **Gas Gangrene.**—Vincent reports forty cases of gas gangrene developing after the men had been sent back from the front, their war wounds apparently well on the road to healing. Over 28 per cent. of the men died. They had been wounded at different parts of the war zone, the majority from Lorraine. In twenty-two of the cases an extensive operation or amputation was done, but thirteen died and three of the others treated with minor surgical measures. He laments that the fatalities were unmistakably traceable to the delay before the men got the proper surgical treatment, owing to lack of men with surgical training or lack of advanced operating posts. Vaccine therapy seems to have a future in these cases; he is confident that the recovery of one of the men was materially promoted by antistreptococcus serum. Weinberg insists that the vaccine must be autogenous and total, and be administered immediately. He makes the vaccine with the centrifuge sediment from the serous fluid aspirated from the recesses of the wound. Lumière found staphylococci, septic vibrios, the perfringens and the Nicolaier bacillus on projectiles by the seventh to the eightieth days when they had entirely and apparently harmlessly healed in the tissues. This confirms the danger of rousing slumbering tetanus and gas gangrene germs in a secondary operation. It also confirms the advantage of immediately removing the foreign body always as a routine measure.

86. **Prostheses Among the Ancients.**—Branchu gives twenty-three illustrations of various devices to correct deformity, from Hippocrates' day down through the sixteenth century. The earliest are sets of ivory teeth that were fastened to sound teeth with gold wires. Another early device is an artificial eye made to fit in place by cupping suction, with a flexible metal support hidden in the hair. Masks with minute openings opposite each eye were used to correct squint. Other illustrations show artificial ears, noses and plugs for cleft palate. The latter were combinations of sponge and metal plate. The sponge was introduced dry; as it swelled it sustained the metal plate against the roof of the mouth. Another device worn in the mouth after loss of the tongue permitted some attempt at speech.

Paris Médical

July 7, VII, No. 27, pp. 1-44

88 *Difference Between the Results of Injury of Nerve Centers in Peace and in Wartime. J. Camus.—p. 1.
89 *Treatment of Wounds of Nerve with Much Loss of Substance. P. Mauclaire.—p. 6.
90 *Spinal Cord Trouble from Concussion of the Spine from a Distance. H. Claude and J. Lhermitte.—p. 11.
91 Psychology of Simulation. Laignel-Lavastine and P. Courbon. p. 14.

92 Visual Hallucinations and Jacksonian Attacks After Injury of the Occipital Lobe. P. Lereboullet and J. Mouzon.—p. 19.
93 The Psychic Disturbances After Shell Shock. (Les commotionnés.) R. Charon and G. Halberstadt.—p. 23.
94 Defective Restoration of Motor Nerve Fibers. André-Thomas. —p. 33.
95 Isolation and Reeducation of the "Functionally Wounded." Massacré.—p. 38.

88. **The Neurology of Peace and War.**—This issue of the *Paris Médical* is devoted to various neurologic questions clamoring for solution. Camus relates that time has demonstrated that in many cases of supposed irreparable paralysis and other nervous affections from war wounds, great improvement has been gradually realized. But for those with paraplegia, eschars and sphincter trouble, or hemiplegia or contracture with frequent epileptic seizures, special provision must be made. He discusses this in detail, and the functional and professional reeducation of these *grands infirmes du système nerveux*. He reiterates that they do not belong in the surgical services, and they cannot be sent home, as without specialized care complications would soon develop, but they should be near their families, and their quarters should be made as homelike and attractive as possible. Their future depends on the care and encouragement they receive now, and astonishing cures may be possible.

89. **Treatment of Nerves with Much Loss of Substance.**—Mauclaire has used the trachea from chickens and geese as a tubular sheath slipped over the stumps of the nerve to serve as a guide for their regenerating fibers. He here gives an illustrated description of this and other means for bridging a long gap as practiced by himself and others. Unfortunately the variety of the technics is not paralleled by the excellence of the results. This is due to the fibrous neuritis which accompanies war wounds and often is tantamount to a section of the nerve. The first step, therefore, with any technic is to clear away all fibrous tissue from the ends of the nerve.

90. **Spinal Cord Lesions from Indirect Injury.**—Claude and Lhermitte show that besides the injury of the spinal cord from a shell explosion near by, without local traumatism, and those from direct concussion of the spine, similar injury may be induced by a projectile striking soft parts at a distance, the chest walls or the muscles near the spine.

Presse Médicale, Paris

July 9, XXV, No. 38, pp. 385-400

96 *Association of Reflex Nervous Disturbances with Hysteria in the Wounded. (Troubles physiopathiques d'ordre réflexe.) J. Babinski and J. Froment.—p. 385.
97 *Extraction of Projectiles in the Pelvis Through Posterior Wall. Auvray.—p. 386.
98 *Rebuilding the Face. (Autoplastie de la face suivant la methode Moure.) P. Pietri.—p. 388.
99 *Gas Gangrene. A. Chalier.—p. 390.
100 *Emetin Bismuth Iodid in Treatment of Amebic Dysentery. A. Leboeuf.—p. 391.
101 *Resection of Auriculotemporal Nerve in Treatment of Parotid Fistulas. L. Dieulafé.—p. 392.
102 Intraspinal Anesthesia. V. Pauchet.—p. 394.

96. **Reflex and Hysteric Nervous Disturbance in the Wounded.**—Babinski and Froment admit a reflex element in certain motor nervous disturbances in the wounded, but say that this does not last. Its place may be taken, however, by a hysteric contracture, so that treatment for hysteria may ultimately cure when at first it had no effect on the nervous trouble.

97. **Access to the Pelvis from the Rear.**—In the three cases described, Auvray removed a scrap of shell in the posterior wall of the rectum or close to the sacrum or the bladder, through an opening made in the sacrum. The gluteus muscle was divided lengthwise of its fibers and then they were cut across. There has been no disturbance in the gait or functioning of the muscles since. This mode of access has several advantages in such cases.

98. **Reconstructing the Face.**—The photographs "before and after" show the excellent result of the application of Moure's method of autoplastics. He utilizes the subjacent adipose tissue to pack the depressions, turning it over by the Indian technic. The actual loss of the soft parts is generally small, even when the deformity is considerable, and it is usually possible to reconstruct the face satisfactorily from what is left after the wound has entirely healed. A course of hot air and massage are given first to loosen up the tissues.

99. **Gas Gangrene.**—In Chalier's 108 cases of true gas gangrene, it developed within twenty-four hours in 16 per cent., not until the third or sixth days in 18 per cent., but in all before the week was out. The wounds were all on the limbs, generally the legs, and always with great laceration of muscles. In 74 cases conservative measures were applied and proved successful in over 55 per cent. of the 52 cases which did not compel amputation later. This group included 27.3 per cent. of 22 of the diffuse form. The conservative measures were deep and extensive electric cauterization (*pointes de feu*), and interstitial injection of hydrogen dioxid after extensive excision of all affected tissues.

100. **Emetin Bismuth Iodid in the Treatment of Amebiasis.**—Lebœuf has been giving a trial to emetin and bismuth iodid in treatment of amebic dysentery, and thinks that this compound is more regularly effectual than emetin alone. The latter is liable to be eliminated before it has had a chance to do all its work. In the ten cases reported the men took 0.18 gm. of the iodid daily for twelve days, and the ameba and cysts disappeared completely from the stools.

101. **Nerve Resection in Treatment of Salivary Fistula.**—Dieulafé has resected the auriculotemporal nerve in treatment of rebellious fistulas in the parotid gland in five cases. In two the operation had to be done in the midst of cicatricial changes. This arrested the secretion of saliva, and the fistula healed as the irritation from the saliva ceased. In two cases the healing was hastened by cauterizing which previously had had no effect.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 7, XLVII, No. 27, pp. 849-880

103 *The Movements of the Eyes Induced by Tests Applied to the Ears. J. Stähli.—p. 849.
104 The Origin and Nature of the Roentgen Rays. M. Steiger.—p. 860.
105 *Vacuum Bottles as Receptacles for Milk. von Bergen.—p. 870.
106 *Suicides from Poison. J. R. Spinner.—p. 872.

103. **Labyrinthine Ophthalmostatics.**—Stähli remarks that in a few years the centennial of the discoveries by Flourens in the field of vestibular physiology can be celebrated. But only comparatively recently has medicine sought to utilize the data thus presented so long ago by the physiologists. Bárány the otologist and Bartels the ophthalmologist have contributed much in this line, and all within the last ten years. The ear-eye movements are observed almost throughout the whole animal kingdom, Stähli recalls, even in invertebrates. There is quite a literature on the ear-eye movements in crabs. He describes the physiologic mechanism and the various features of vestibular nystagmus, the caloric reactions, etc. With rotation nystagmus there are always two phases, a slow and then a rapid phase. The latter does not appear in the unconscious, the prematurely born and in others with defective brain action. This seems to indicate that the ear is responsible for the first phase alone; the second phase is the work of the brain. The nystagmus can be induced by only slight rotation, not more than for a few degrees. These ear-eye movements have proved most instructive in otology to date, the caloric and rotation tests demonstrating whether or not the vestibular apparatus is intact. Neurology also depends on these tests for diagnosis of intracranial tumors, ocular paralysis, etc. Certain features of miners' nystagmus indicate that influences from the ear are important if not the exclusive factors. The nystagmus of the blind is entirely involuntary, and ear influences are probably at work here also. In Stähli's practice at Zurich he has encountered many cases of tremor of the eyes or pronounced nystagmus in apparently entirely healthy persons. The nystagmus was horizontal in some, rotary in others, and vertical in a few. This nystagmus used to be ascribed to difficulty in fixation during early childhood, with more or less defective vision, but now we regard the ear as responsible for it. This is the more probable as examination shows normal conditions in the eyes as the rule. Recent research has indicated further that for certain forms of squint the ear must be incriminated. In short, these "labyrinthine ophthalmostatics" offer a new and interesting

field for further study by physicians as well as by eye and ear specialists.

105. **Vacuum Bottles for Keeping Milk Warm.**—Bergen warns that milk kept warm in a vacuum bottle is an excellent culture medium for germs, all the conditions favoring proliferation of germs in the milk. If a vacuum bottle is used, the milk should be poured in boiling hot; this will help to keep it properly.

106. **Suicides with Poisons.**—Spinner cites statistics in Switzerland which show that suicides from poison are more numerous among male than among women suicides. Of the total 474 poison suicide cases in Switzerland during the last ten years, 56.1 per cent. were men and only 43.9 per cent. women and girls. He urges compilation of data as to the kind of poison and other features of the cases as a basis for prophylaxis. He cites as typical of what can be accomplished, the complete disappearance of phosphorus poisonings of all kinds since phosphorus matches are no longer used.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 3, XXXVIII, No. 44, pp. 649-663

107 *Special Features of Typhoid in the Italian Troops. F. Durant. p. 651.

June 7, No. 45, pp. 665-672

108 *Meningococci in the Blood. G. Raffaelli.—p. 665.
109 Hemiplegia from Cerebral Embolism Following Bullet Wound of Internal Carotid. C. Frugoni.—p. 667.

107. **Typhoid in the Troops.**—Durant describes the special features which distinguish typhoid in the camp environment, as modified by vaccination, etc., in 215 cases. He regards the diarrhea as a defensive process, and reenforces it by giving daily 20 gm. glycerin by the mouth, in a liter of water. This has nourishing value, he says, besides that it facilitates the absorption of food and has a direct disinfecting action on the bacterial flora, and an indirect action, by means of the bile, on the biologic properties of the germs present in the intestines. Its cholagogue action is the most important, perhaps. The results of this treatment have been good in his experience; he has also had excellent results with vaccine therapy in addition.

108. **Meningococci in the Blood.**—Raffaelli declares that epidemic meningitis must be considered a meningococcus sepsis. The meninges are merely the most common seat of the metastases. In twenty-two cases described in detail they were found in the blood in all but two and in these cases only a single examination was made. He thinks that the negative findings others have reported must be ascribed to the slight resisting power of these cocci; they die off before they get a chance to proliferate unless the culture is made directly from a vein. He urges that during epidemics the blood, rather than the nasopharyngeal secretions should be examined. This would disclose carriers much more reliably than with the usual measures, especially in case of children with fever from gastro-intestinal, visceral or joint trouble, purpura, etc. This might reveal hitherto overlooked links in the chain.

Policlinico, Rome

July 8, XXIV, No. 28, pp. 873-900

110 *Epidemic of Infectious Purpura among the Troops. F. Vannutelli. —p. 873.
111 Hemorrhagic Nephritis among the Troops. C. Bartolotti.—p. 879.
112 Operative Treatment and Cure in Case of Destructive Noma. L. Moncalvi.—p. 884.
113 *Improved Technic for Ligation of Popliteal Artery. S. Marinacci. —p. 888.
114 *Electrovibrator in Treatment of Digestive Tract. V. Maragliano. —p. 888.

110-111. **Purpura and Nephritis in Soldiers.**—Vannutelli says that when this hemorrhagic disease developed in epidemic form among the troops at the front, many regarded it at first as of factitious origin as the hemorrhagic manifestations were restricted almost entirely to the legs. After a prodromal period of eight or ten days, the symptoms resembling Werlhof's disease developed and recovery was not complete for from one to three months. The pulse was slow and pressure low, the spleen enlarged, but no blood or albumin in the urine as a rule. Treatment was with salicylates and epinephrin; the latter proved very effectual. He usually gave the epinephrin by the mouth up to 90 or 100 drops daily of a 1:1,000 solution, and injected two 0.25 c.c. ampules of the same. The effect was most favorable when the epinephrin was given systematically for a long time, and especially by the subcutaneous route. He insists that it has a triple action, checking the tendency to hemorrhage, counteracting the intoxication by stimulating diuresis, while at the same time it exalts the organic defensive processes. The only men affected were those who had been long in the trenches. The early fall was the season of the epidemic, scarcely any cases being encountered after November 1.

Bartolotti has observed a number of somewhat similar cases only that the kidneys were affected more regularly. He incriminates the excess of proteins in the diet as this seems to be far beyond what is suitable for men unable to get exercise in the trenches.

113. **Improved Technic for Ligation of Popliteal Artery.**—Marinacci obtains access to the artery where it leaves the adductor to enter the lozenge-shaped popliteal space, reaching it through a vertical incision along the internal posterior margin of the tendon of the adductor longus, the knee semiflexed. The artery is reached closer to the surface here and is more readily separated from the vein, than by the usual technic.

114. **The Electrovibrator in Gastro-Intestinal Differentiation.**—Maragliano has the subject ingest some magnetic iron and then he applies the electrovibrator to the outside. The palpating hand can readily locate the outlines of the organ containing the iron as the vibrations occur under the influence of the electric apparatus. The findings are most pronounced with the stomach, but even in the cecum it is possible to follow the iron in this way after ingestion of about 30 gm., and control the findings with roentgenography. It is possible that the vibration induced inside the organ by this means might have a direct curative action, a kind of internal massage.

Riforma Medica, Naples

June 30, XXXIII, No. 26, pp. 669-688

115 Treatment of War Wounds of Joints. S. Salinari.—p. 669. Continuation.
116 War Nephritis; Two Cases. L. Eustachio.—p. 674. To be continued.
117 *Spontaneous Muscle Sign of Tabes. A. Cominelli.—p. 677.

117. **Tendon-Muscle Twitching as Symptom of Tabes.**—Cominelli called attention nearly eight years ago to what he called muscle-tendon subsultus, a spasmodic jerking of the muscles as the patient stands erect, most marked in the region of the ankle. There does not seem to be any regularity or rhythm to the twitching, but it corresponds to the course of the tendons and is evidently a sign of spinal ataxia. He here reiterates its differential and pathogenic value, quoting from the literature on the subject of ataxia in general. A tracing is given of the subsultus taken with the eyes open and another with the eyes closed. The difference between them is pathognomonic of ataxic parakinesis. He has never found this sign absent in tabes, and says that it may even precede the motor symptoms.

Brazil Medico, Rio de Janeiro

June 9, XXXI, No. 23, pp.193-200

118 Present Status of Diphtheria. R. D. de Sanson.—p. 193. Commenced in No. 22, p. 185.

June 16, No. 24, pp. 201-208

119 Intestinal Trichomonosis. R. da Silva.—p. 201.
120 *Puncture of Corpus Callosum. (Uma operação de Bramann.) C. Wallau.—p. 203. Commenced in No. 20, p. 168.

120. **Puncture of Corpus Callosum.**—Wallau reports the first operation by Bramann's technic done in Brazil. The patient was a girl of 14 who had lost the sight of one eye and the other was fast going—choked disk being already apparent—from some intracranial lesion. The corpus callosum was found at a depth of about 6 cm. The brain showed no sign of pulsation when the skull was opened, owing to the extreme compression to which it had been subjected, but after the corpus callosum had been punctured and about 10 gm. of a bloody fluid withdrawn, the pulse in the brain seemed to return to normal. The operation lasted not quite an hour

and the patient bore it well. Vision since has much improved. He reviews the literature on the subject, and compares the simple Bramann technic with the complicated measures otherwise necessary in certain cases of dangerous pressure on the brain. He declares it is a less serious intervention than lumbar puncture; no fatalities with it have been known, and he says there are no absolute contraindications. The operation has been done to date in seventeen cases of hydrocephalus; five of pituitary tumors; twenty-three of tumors or cysts in or near the ventricles; in two of nonpurulent meningitis, one of steeple skull and seventeen of epilepsy, besides numerous cases in which it was merely a preliminary to an operation.

Revista Clinica, Medellin, Colombia

June, II, No. 5, pp. 200-246

121 *Cancer in Colombia. J. B. Montoya.—p. 200.
122 *Reflex Therapy. B. Mejia.—p. 209.
123 Genital Prolapse. A. Castro.—p. 210.
124 Extra-Uterine Pregnancy. G. J. Gil.—p. 222.

121. **Cancer in Colombia.**—Montoya reports 168 cases of cancer in which he has operated in the last eleven years. The uterus was the seat of the malignant disease in 25 per cent., the stomach in 7.6 per cent.; the breast in 15 per cent. the upper jaw in 10 per cent. and the liver and penis in 2 and 3 per cent. Neoplasms have formed about 21 per cent. of all the 1,921 operations done in his service during the eleven years. Sarcoma in the legs is comparatively frequent, and grows very large, with early recurrence even after extensive resection. The parotid gland is frequently the site of huge mixed tumors, but they can be successfully removed without recurrence. He regards the electro-coagulation technic as the greatest progress of late in the treatment of accessible cancer, and reports a few cases to illustrate the fine results attainable even with inoperable malignant disease. In conclusion he lists the indications with different types of cancer, warning particularly that with large sarcomas mishaps from the anesthetic and shock from hemorrhage are very frequent. The patients with these large sarcomas are generally obese women with heart and kidney lesions. They should be given preliminary treatment or no operation should be attempted.

122. **Reflex Therapy.**—Mejia includes epidural injections and dilatation of the urethra among the weapons of reflex therapy. He here relates the successful application of epidural injections of sodium chlorid in the case of a man of 62 with a tendency to neurasthenia and slight enlargement of the prostate. He consulted the physician on account of impotency for the last few months. The epidural injections were painful and he refused further treatment after the second. A few days later, however, he returned for more, saying they had certainly improved him. Under six further injections entirely satisfactory results were obtained, and they have persisted during the three months to date. In two cases of irritable bladder and sudden retention of urine in women with a tendency to hysteria, dilatation of the urethra, under chloroform, put an end to all the disturbances.

Semana Medica, Buenos Aires

XXIV, No. 9, pp. 247-274

125 Typhoid in Northern Brazilian City (Rosario). J. B. Valdes.—p. 247.
126 Milk in Infant Feeding. E. Fynn.—p. 255.
127 *The Campaign against Alcoholism. E. R. Coni.—p. 259.
128 Lymphocytosis in Syphilitics. C. P. Mayer and A. C. Gourdy.—p. 269. Continuation.

127. **Progress of Hygiene in Argentina.**—This is one of the chapters of Coni's autobiography which is being published in serial form as a contribution to the history of public and social hygiene in the Argentine Republic. Coni has always taken a leading part in all such matters. His book is to be entitled "The Memoirs of a Medical Hygienist." His first address was on alcoholism. It was read before the Sixth International Medical Congress at Amsterdam, 1879; he was the delegate from Buenos Aires. He urged the necessity for treating habitual drunkards and extolled the institutions for the purpose in the United States, the only country said to have them at that time.

Siglo Medico, Madrid

June 30, LXIV, No. 3316, pp. 465-484

129 *Chronic Cystitis with Retention Treated with Iodin Fumes. P. Cifuentes.—p. 466.
130 *Treatment of Furuncles. E. Oyarzabal.—p. 468.
131 *Diathermy for Gonococcus Orchitis and Epididymitis. B. N. Canovas.—p. 469.
132 *Peptic Ulcer in Jejunum after Gastro-Enterostomy. L. Urrutia.—p. 470.
133 Present Status of Our Knowledge of Diabetes. N. Santos.—p. 479.

129. **Iodin Fumes in Treatment of Chronic Cystitis.**—Cifuentes gives the details of a typical case of chronic bladder trouble dating from gonococcus infection twenty-three years before. The present status included pain in perineum and hypogastrium with micturition frequent and painful but no hematuria or gravel. The prostate was somewhat enlarged, the urethra constricted, the capacity of the bladder 190 c.c. As all other treatment had failed to induce a permanent cure, Cifuentes applied the iodin fumes technic. The iodoform is placed in a spindle-shaped glass receptacle with an opening at the top and the open ends drawn out to permit a rubber tube to be slipped over each. As the iodoform is heated over an alcohol flame the fumes of iodin are pumped through a catheter into the bladder. (The method was described with an illustration in THE JOURNAL, 1912, **59**, 488.) He made eight applications, using 0.05 gm. iodoform each time. By the third, marked improvement was evident. All the symptoms subsided and there has been no further trouble during the two months since. Tuberculous cystitis seems to be the special field for this method of local iodin fumigation, but it is valuable in all forms of cystitis, particularly old chronic cases. Cifuentes has had very gratifying results with it also in the rebellious cystitis accompanying an enlarged prostate. The only caution is to keep the amount of air injected within the capacity of the bladder, previously determined. The applications seem to be borne better in the nontuberculous cases.

130. **Treatment of Furuncles.**—Oyarzabal applies a mercurial salve at the first sign of a furuncle, and tries to abort it by touching the center with phenol or the actual cautery. He cuts the hairs in the region and cleanses with benzin, and then applies a small piece of mercurial plaster and over this another of zinc oxid. He changes these once or twice a day, cleansing with benzin. The whole region should be washed daily with hot water and a medicated soap. When the furuncle is once established and painful, he applies fomentations with a 2 or 3 per cent. hot splution of resorcin with 20 or 30 per cent. alcohol. As soon as the center shows pus or sloughing, he applies phenol on cotton wound on a toothpick, or heat. A Bier vacuum glass facilitates the cure; aspiration is applied for five minutes at a time, with pause for two or three minutes, keeping this up for three quarters of an hour or until blood comes without pain. If the skin is not much macerated it can be painted from time to time with iodin. When the region shows a tendency to develop furuncles it should be kept covered with a sulphur salve with ichthyol or cinnabar, and the region around be painted with iodin. In rebellious furunculosis an autovaccine sometimes has a surprisingly favorable action. Very large carbuncles require surgical measures.

131. **Diathermy for Gonococcus Orchitis.**—Canovas published over two years ago an account of the excellent results he had obtained with diathermy in treatment of gonorrheal arthritis. Since then he has applied it in seventy-three cases of orchitis and epididymitis of similar origin, and declares that diathermy surpasses all other known methods of treating such affections. For orchi-epididymitis, he says it is the ideal treatment. Whether acute, subacute or chronic, it relieves the pain at once and cures it completely by the third or fourth application, and the patient does not have to stay in bed. The deep application of heat not only reduces the inflammation but kills the gonococci in the depths of the tissues. The technic is simple and cleanly, and as the cure is so rapid and complete the patient's genital functions are not permanently impaired.

132. **Peptic Ulcers.**—Urrutia reviews the literature on jejunal ulcer following gastro-enterostomy, and reports six cases from his own experience. In one an anterior gastro-enterostomy for duodenal ulcer put an end to the symptoms for ten days, but then others flared up, and in a month a tumor could be palpated in the epigastrium. With peptic ulcer after posterior gastro-enterostomy palpation is seldom possible. There was a tumor the size of a mandarin orange in one of his cases, but it could not be felt through the abdomen wall. In two of his cases the jejunum perforated into the colon. The diagnosis was unmistakable when this occurred. Polya in 1912 had compiled nineteen cases of this type. In one of Urrutia's cases the hyperacidity persisted almost unmodified after the gastro-enterostomy, and notwithstanding extreme care and most careful dieting a peptic ulcer developed in the jejunum. In his last three cases, one patient died in spite of a prompt secondary operation.

Grèce Médicale, Athens

XIX, No. 3, pp. 5-8

134 *Postoperative Eventration; Two Cases. G. dré Kolias.—p. 5. Commenced in No. 1, p. 1.
135 Treatment of Psoriasis. Queyrat. Commenced in No. 1, p. 3.

134. **Postoperative Eventration.**—In the first of the two cases described—in a woman of 45—the eventration had followed removal of a cystic ovary and the skin had ulcerated. The protruding intestines slid back into place as the woman reclined, but finally they burst through the skin and were in contact with the clothing for fifty-two hours. The rectus muscles had been so stretched that they could be drawn up to close the gap. He thinks that the eventrated bowel should be replaced if it has not become infected and is not covered with false membranes. In both cases he did this, and the wound healed by primary intention. The abdominal fluid lubricates and protects against infection as the saliva protects erosions in the mouth. A narrow corset, leaving the diaphragm free, is an excellent means of protecting against eventration in those with large paunches. The latter are prevalent in the near East as starchy foods are used a great deal, and much fluid ingested.

Kitasato Archives of Experimental Medicine, Tokio

April, 1, No. 1, pp. 1-156

136 *On the Life Cycle of the Mite Carrier of Tsutsugamushi, Japanese River Fever. M. Miyajima and T. Okumura.—p. 1. In Engiish.
137 Investigation of Therapy of Tuberculosis. K. Shiga.—p. 17. In Engiish.
138 *Spirochetosis with Hemorrhagic Jaundice. R. Inada, Y. Ito and others.—p. 55. In German.
139 *Stain for Protozoa and Blood Corpuscles. T. Watabiki.—p. 153. In French.

The "Kitasato Archives."—This new publication issues from the Institute for Infectious Diseases founded by Kitasato in 1892 on his return from his work with Koch. It was founded as a private undertaking, but was transferred to the government for a time, 1899 to 1914, and is now again a private institution. The *Archives* are to be issued twice a year in English, French and German, aiming to bring Japanese medicine to the attention of the world.

136. **Mite Carrier of Tsutsugamushi Disease.**—"River fever" occurs endemically in certain parts of Japan and resembles somewhat Rocky Mountain fever and also typhus, but the transmitting agent seems to be a minute, yellowish red mite. This communication with its colored plates describes the life cycle of this hairy arthropod. It is said that the proper name for it should be *Leptus akamushi*.

138. **Icterohemorrhagic Spirochetosis.**—This article was reviewed when published elsewhere. See THE JOURNAL, Sept. 9, 1916, p. 842.

139. **Polychrome Stain for Protozoa and Blood Corpuscles.**—Watabiki relates that he has been studying for years to find the best formula for differential staining purposes, and describes here the technic which he has found most satisfactory. The tints are no deeper than with the Giemsa but the different parts of the cell show up more plainly. The nucleus, the spirochetes, flagella, and the chromatin of the malaria germ show up a reddish violet, while the bodies of trypanosomes, malaria germs and the protoplasm of the leukocytes and other cells are blue; the granules of eosinophils and pseudo-eosinophils are red; the neutrophil granules pale bluish red; the basophil granules dark violet, almost black. Bacteria stain blue or black, the nucleus of the nucleated red corpuscles a bluish black. The formula for the first solution is 1 part pure methylene blue; 10 parts absolute alcohol; 1 part sodium carbonate and 90 parts distilled water. Dissolve the blue in the alcohol and the carbonate in the water and then mix and set aside at a temperature of 37 C. for two days. The second reagent is a solution of 1 part eosin in 200 parts distilled water (soluble *eosin jaunatre*). Reagent No. 1, after filtering, is slowly added to Reagent No. 2 and the mixture is incubated at 37 C. for twenty-four hours, to give it time to dry out. The resulting powder is ground in a mortar and methyl alcohol added in small amounts. The solution of the powder in the methyl alcohol is then filtered and glycerin added. It keeps a long time in a cool dark place. It is applied in ten parts distilled water, leaving it in contact with the specimen for from ten to thirty minutes.

Russkiy Vrach, Petrograd

XVI, No. 10, pp. 217-240

140 Organization of the Medical Societies of Petrograd District with Enlarged Aims. K. P. Sulima.—p. 217.
141 *Retrograde Catheterization in Treatment of War Wounds Involving the Urinary Passages. T. K. Veber.—p. 219.
142 Paralysis of the Arm after Application of Esmarch Band. V. N. Parin.—p. 222.
143 A Year's Experience with War Wounds of the Skull. S. I. Liukumovitch.—p. 224. Concluded in No. 11.
144 Bactericidal Efficacy of Ehrlich's Salvarsan and Hata's Arsaminol. M. P. Izabolinsky and L. B. Malkina.—p. 227.
145 *Chemotherapy of Lambliosis. V. L. Yakimoff and others.—p. 232.
146 *The Physiologic Bases for Electrocardiography, and its Clinical Importance. M. M. Gubergritz.—p. 233.

141. **Retrograde Catheterization with Obstructed Urethra.**—Veber refers in particular to obstruction caused by a war wound, and expatiates on the advantages of catheterizing from the bladder downward. Only a very small opening in the bladder is necessary to introduce the catheter, but the anterior wall of the bladder must be drawn taut as otherwise the neck region might protrude and block the entrance into the urethra. By passing a silk thread through the entire urethra from above it is possible to keep up the catheterization indefinitely, finally getting a retention catheter in place. All this immensely simplifies treatment of war wounds in this region and of suppurating processes around the urethra. He mentions that Verguin published the first attempt at retrograde catheterization in 1757. Veber reports a particularly instructive and successful case from his own service.

145. **Treatment of Lambliosis.**—Yakimoff and his co-workers comment on the wide distribution of the *Lamblia intestinalis* in animals as well as man. It has been found in mice, rabbits, dogs, sheep and African hawks. They experimented with it in white mice, giving salvarsan to the infected animals, and report that salvarsan thus proved its efficacy in the cure of lambliosis. A 1 per thousand solution of salvarsan seemed to answer the purpose completely, no lamblia parasites being found in the intestines of the infected mice thus treated and killed from one to over three months later. The salvarsan did not seem to affect the *Octomitus muri* which was occasionally found in the mice, but its prompt success in eradicating the lamblia suggests that it may prove effectual for lamblia dysentery and diarrhea in man. In their experience on the firing line in the Caucasus in 1915, numerous cases of dysentery and diarrhea were encountered in which neither the dysentery bacillus nor ameba could be discovered and for which the lamblia seemed alone to be responsible. In Yakimoff's laboratory, about 70 per cent. of the mice harbored the lamblia, but salvarsan treatment seems now to have exterminated the lambliosis among them. It was given by intravenous injection in 1:300 up to 1:1,000 solutions, allowing 1 c.c. of the solution to each 20 gm. of body weight of the mouse.

146. **The Physics Involved in Electrocardiography.**—Gubergritz gives an illustrated description of the physical and mechanical principles involved in electrocardiography, and discusses the various theories that have been advanced to

explain its nature. The conclusion follows in the next issue of the *Vrach.*

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 2, I, No. 22, pp. 1783-1858

147 *Inversion of the Uterus. J. G. de Lint.—p. 1785.
148 The Taking Up of Odorous Substances and Narcotics by the Nerve Cells. (Over het opnemen van reukstoffen en riekende narcotica in zintuigcellen en cellen van de hersenschors.) J. H. Kremer. —p. 1800.
149 *Improved Technic for Detection of Occult Hemorrhage in Alimentary Canal. J. R. F. Rassers.—p. 1808.
150 Presenile Dementia of Alzheimer Type; Two More Cases. G. P. Frets.—p. 1812.
151 Medical Impressions of America. C. W. F. Winckel.—p. 1834.

147. **Inversion of the Uterus.**—De Lint recently had a case of puerperal inversion of the uterus and describes two other unpublished cases. He also tabulates the details of five cases of inversion for which a tumor was responsible, and a number of puerperal cases bringing the total to twenty-nine during the last twenty years in the Netherlands. This is a proportion about three times as large as is on record in German-speaking countries during a similar period. Ruysch reported in 1691 that he had encountered two cases in one week, and remarked that probably more cases of inversion occur than get recognized. In one of the more recent cases the inversion occurred at the woman's fourteenth delivery, but over 33 per cent. were at the first or second childbirth. In de Lint's case the complete inversion followed forcible pressure by the nurse on the fundus through the abdomen, for expulsion of clots, the day after delivery. Attempts to push the uterus back by pressure from the bottom were unsuccessful. He finally managed to work part of one side back into the cervix, and then as he was striving to do the same on the other side, the uterus suddenly slid back entirely into place. The manipulations had evidently induced the organ to contract and its elasticity enabled it to reduce itself spontaneously. Hot irrigation afterward with 1:1,000 thymol was followed by tamponing the vagina and the pelvis was raised and ergot injected and fluid given by the drip method. At first there was a febrile temperature and excessive lochia, but by the end of the week the patient was sitting up and by the end of the month the uterus seemed to be in its normal position.

All the patients recovered in de Lint's compilation except five who succumbed to anemia and one whose uterus had ruptured. One of the women died a year later from cancer of the uterus. In only very few cases did the inversion occur spontaneously during urination, defecation or stooping over. Several writers mention that attempts to reduce the whole *en masse* always failed, while gentle manipulations, forcing small areas back into place, started natural contractions of the uterus, and the organ slid back of itself. In five of the total twenty-nine cases, after failure of manual reduction, the uterus was restored to place by working through an incision in the pouch of Douglas or in the posterior wall of the uterus itself, or the fundus was seized with forceps introduced through a laparotomy opening. The reduction was facilitated by seizing the uterine ligaments while the uterus was pushed up from below. Thorn published in 1911 a compilation of 521 cases of puerperal inversion of the uterus, from international literature during a twenty-two year period. The mortality was 16 per cent.; three of the women died from the shock of the reduction. In de Lint's series, the mortality was 20 per cent. but none succumbed to shock. This seems to be the result of traction on the peritoneum, and reduction puts an end to this, aided by camphorated oil, etc., drawing a rubber tube around the uterus to prevent further hemorrhage. The cases reported by de Lint show that even when the inversion has lasted a long time, patient and persevering manual reduction may safely reduce it. The interval in some of the cases was four days, eight days and eight months. In one case the diagnosis was made the twelfth day and reduction occurred spontaneously a week later. In conclusion he mentions a case seen by Castex in an Arab tribe. The woman was lifted up by her feet by two men, the head down, and a bottle of oil was poured over the protruding uterus which was then easily pushed in. Castex had found reduction absolutely impossible before this. The woman succumbed to peritonitis a few days later.

149. **To Facilitate Detection of Occult Blood in the Stools.**—Rassers writes from the Pharmacotherapeutic Laboratory of the University at Leyden to call attention to a technic for determination of occult blood by which error from the presence of ferments seems to be obviated. The tests hitherto in vogue give a positive response with other substances besides hematin, and Boas in a recent communication said that these misleading substances are probably inorganic thermostable oxidases derived from the food. This latter assumption Rassers was able to confirm as he obtained from potato, soy bean and cornmeal—by a technic described—two ferments, one soluble in water, with a specific response to the guaiac test but becoming inert when heated to 100 C. The second ferment, in an acetic acid-alcohol extract, gives no reaction with the guaiac test but responds positively to the benzidin and phenolphthalin tests, and does not become inert in this respect until heated to 170 or 180 C. Hematin does not stand well heating to this point. This he proved by adding equal portions of hematin to equal portions of chemically pure sand, and heating one. The heated portion gave much weaker responses to the various tests applied thereafter than the unheated portion. To avoid these sources of error he has worked out a simple technic by which disturbing ferments seem to be entirely eliminated. It is based on the property possessed by ferments of being precipitated by concentrated solutions of cooking salt. He first binds the ferments with the salt solution, and then makes an ether-alcohol extract. The alcohol is not able to separate the ferments from their combination with the salt, but it extracts the hematin, and thus if any hematin is present in the fluid it can be readily shown up. After certainty that no blood from gums or hemorrhoids will falsify the test, and the patient has refrained for at least five days from food containing blood, 20 gm. of stool is thoroughly rubbed up in a mortar with equal parts acetone or equal parts of alcohol and ether. From the mass left on the filter, allowed to dry a little, 1 gm. is weighed out and after addition of ten drops of glacial acetic acid, it is thoroughly mixed with 20 c.c. of a 25 per cent. solution of kitchen salt. Then 10 c.c. of absolute alcohol is added and the whole filtered. When this technic is applied to feces rich in ferments but free from blood, such as normal infant stools, no ferments will be found in the filtrate. If hematin has been added to the stools, it will show up as plainly or at least only very slightly less distinctly than without this treatment.

The method has one single drawback, namely, that with it the benzidin and guaiac technics cannot be applied to show up the hematin. However, Rassers remarks, a mixture of acetic acid-alcohol and cooking salt gives a positive reaction with these tests even without any hematin. The loss of the benzidin reaction is to be regretted, but the fact that kitchen salt is able to give a positive reaction with it does not enhance the reliability of this reaction as a test for occult blood. The guaiac test, on the other hand, is not sensitive enough for negative findings with it to be conclusive. The phenolphthalin test may answer the purpose. He never obtained positive findings with it in normal persons.

Hospitalstidende, Copenhagen

June 20, LX, No. 25, 597-620

152 *Case of Myocarditis Localized in the Interventricular Septum with Peculiar Anomalies in the Electrocardiogram. L. S. Fridericia and P. Møller.—p. 597. Commenced in No. 24, p. 573.

152. **The Electrogram with Myocarditis of the Ventricular Septum.**—Necropsy showed fibrous changes in the interventricular septum. The electrocardiograms displayed certain special features which will in future differentiate affections of this type, especially the absence of any sign to show that the auricles were pulsating, notwithstanding the regularity of the heart beat. The tracings of the ventricle beat also varied in shape in the different systoles. All the four hitherto published cases of varying electrographic systole-complexes were from patients with severe symptoms of cardiac insufficiency, but there has been no necropsy in two and in the third the necropsy findings seemed to be negative.